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Number 5.

AUGUST, 1906.

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TEXTILE WORLD RECORD

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The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

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Continuous Chainless

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Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

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FOR

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DYEING
DRYING

AND

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Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

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ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application.

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OF

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Patented in the United States, Great Britain and the Continent
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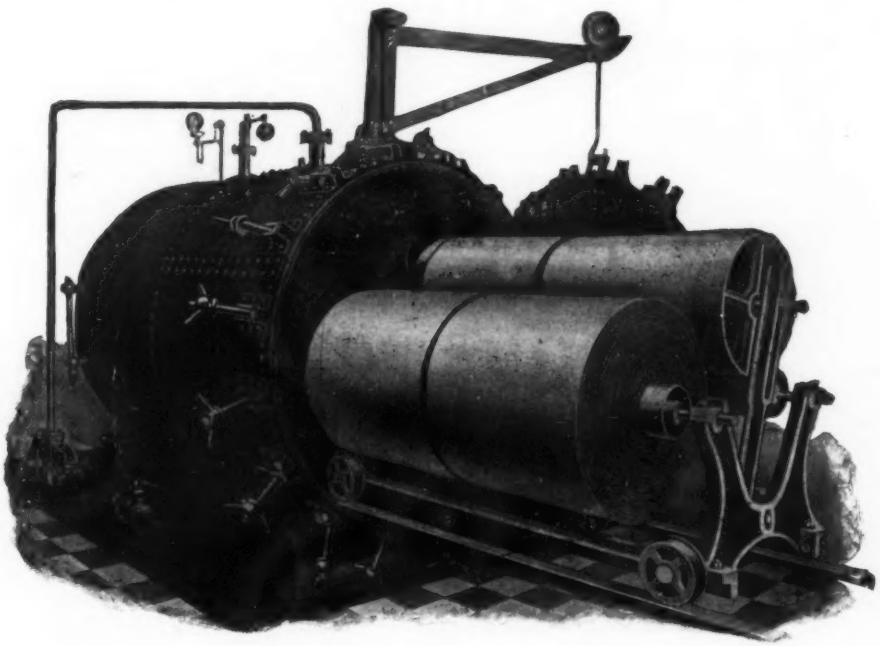

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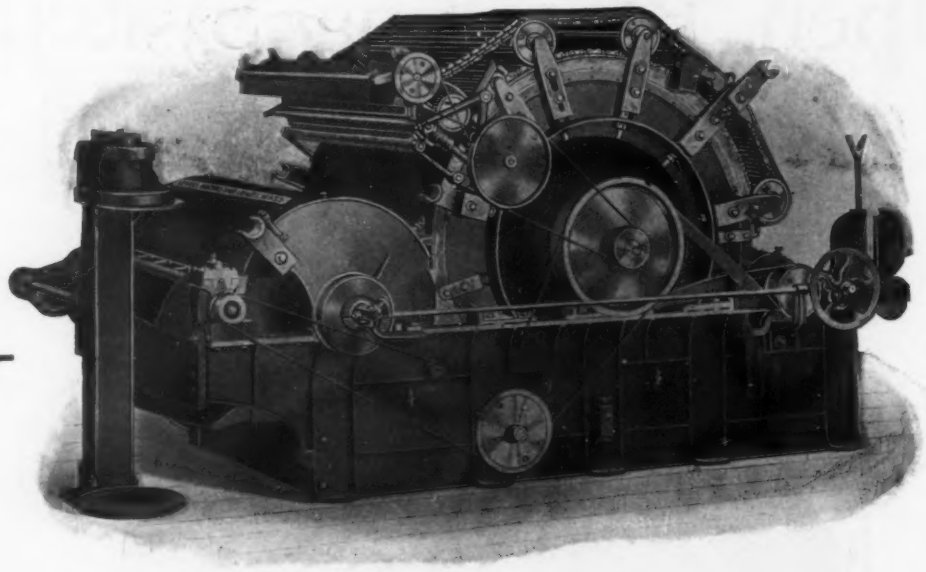

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With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

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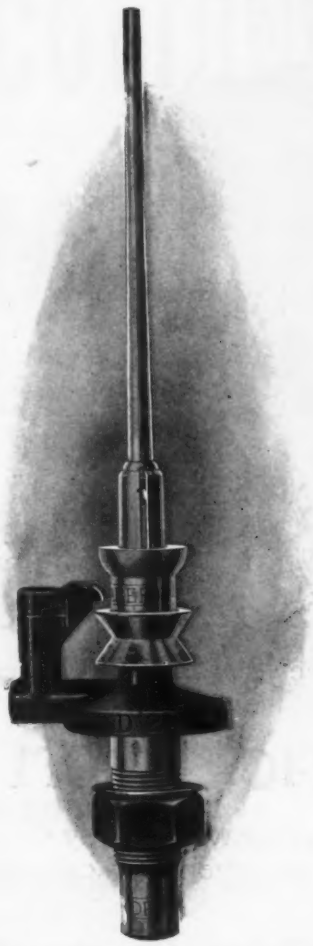

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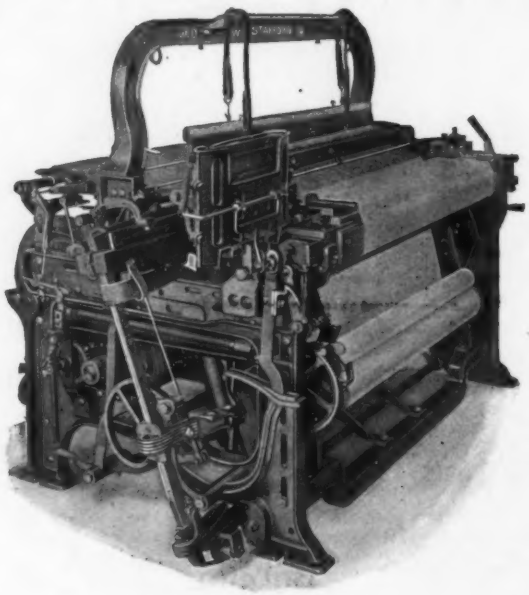

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History Repeats Itself

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Considering quantity of goods produced per weaver, quality of goods, cost of supplies, repair bills, etc., there is no other loom can compare with it for economy of operation.

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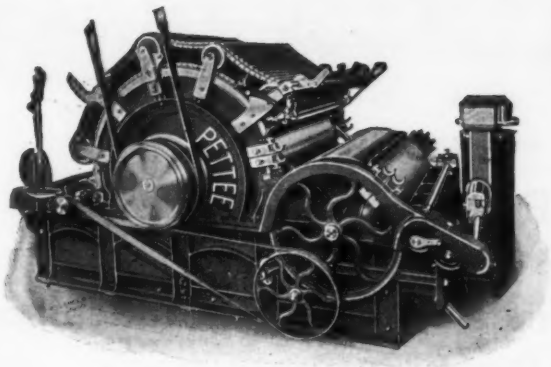

Pickers,
Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

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THE

WHITIN MACHINE WORKS,

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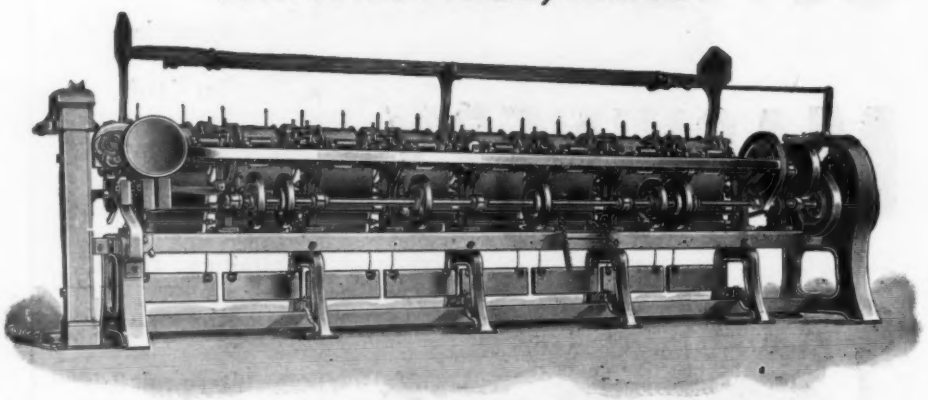

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For Conveying Bale Cotton
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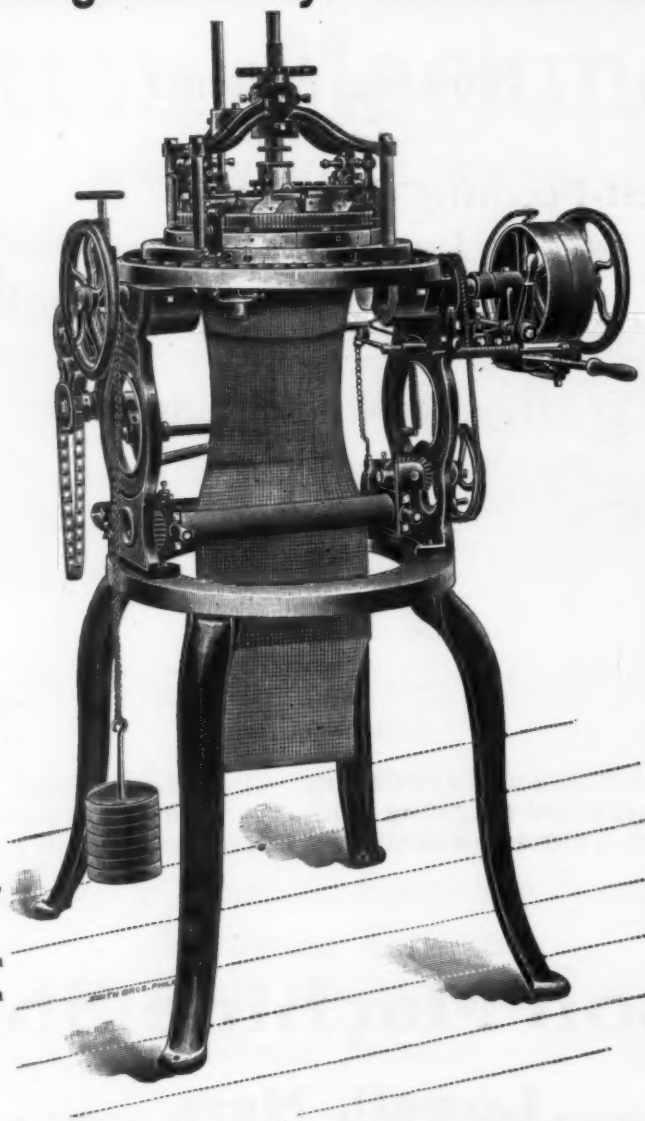
The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.



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Special Machinery for Sweaters etc.

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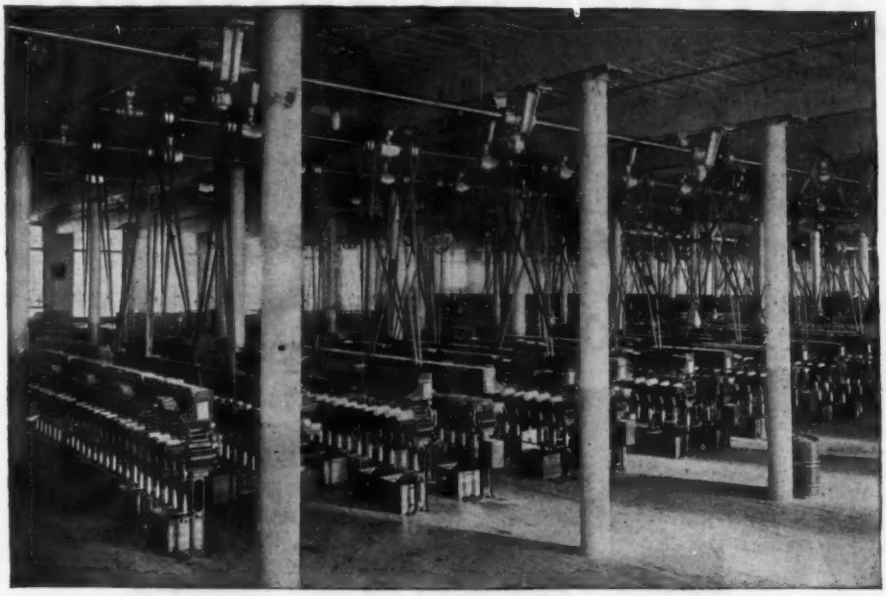

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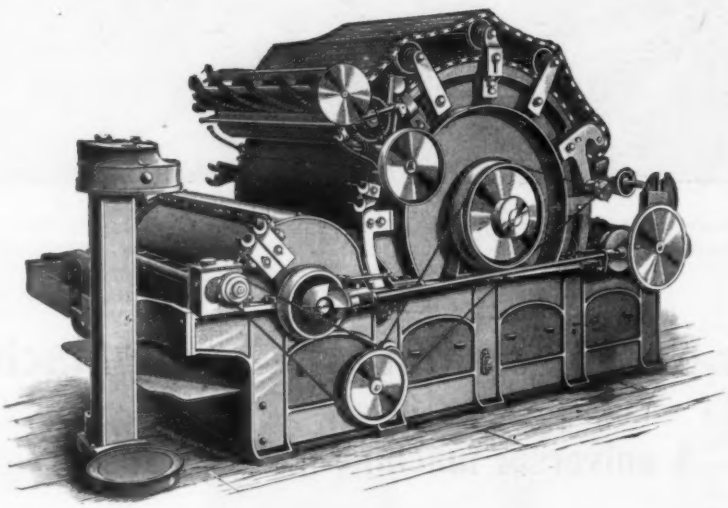

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Letting nothing go out

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Upright Spoolers, Quillers, Warpers, Twisters, etc.

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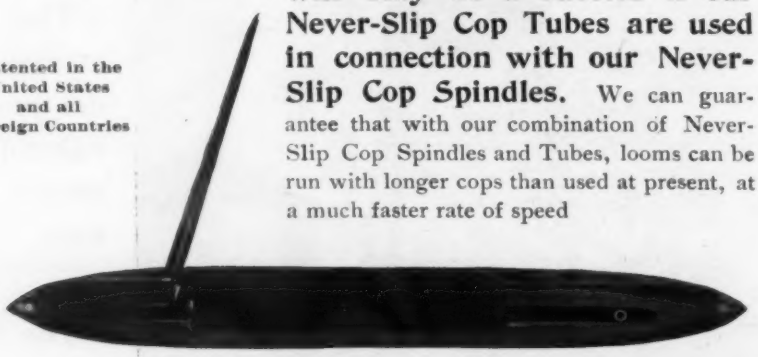

Shuttle with Spindle Raised
U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

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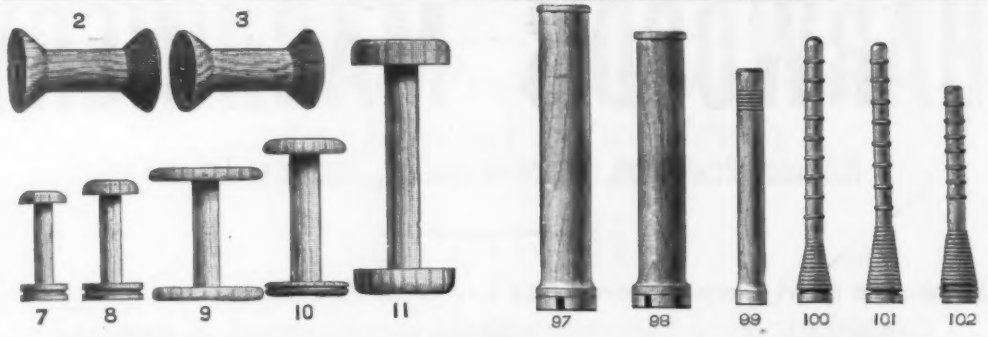
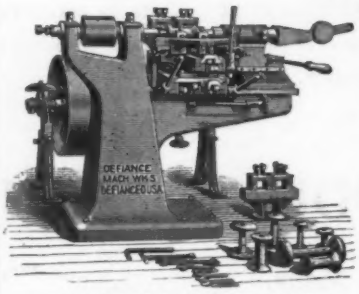


SPOOL AND BOBBIN MACHINERY



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Complete Equipment
OF THE
MOST MODERN TOOLS
25% SAVED
Over the Old Methods
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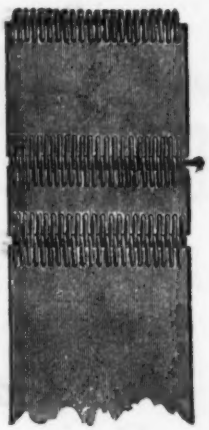
AUTOMATIC BOBBIN LATHE

Skiving and Gluing

is one way to make an endless belt, but its a mighty slow and old-fashioned one as compared with the work of the

Jackson Belt Lacer



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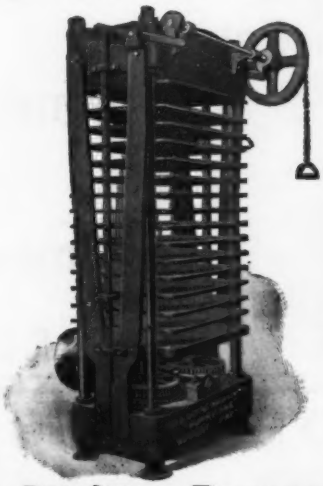

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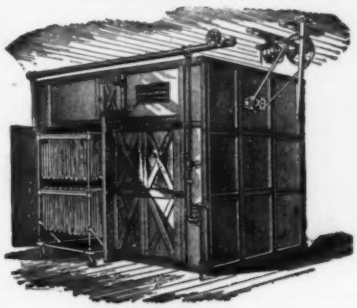

Truck Yarn Dryer.

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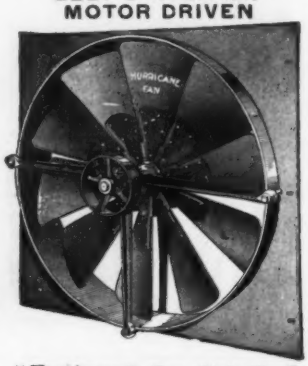

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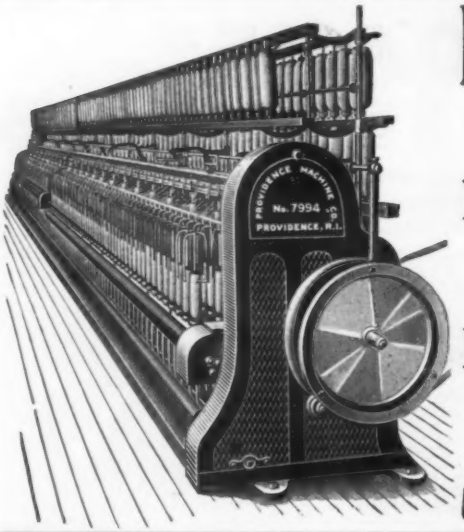

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FOR
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The Best Lubricating and Softening Product

FOR WOOL, COTTON, WOOL AND COTTON MIXED

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Absolutely free from Mineral Oils, Saponifies Perfectly, Odorless, Pure White and Stainless.[] Washes out Perfectly and Easily. Great Economy Guaranteed in its Use. Write for samples, prices and full particulars

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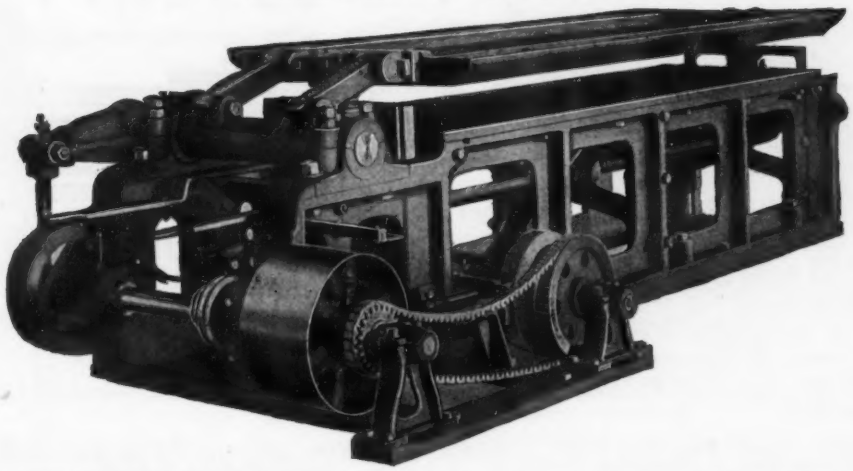

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Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
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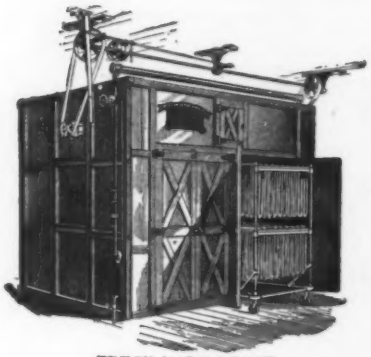

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Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear.

Carbonizers, Yarn and Wool Scouring Machines.

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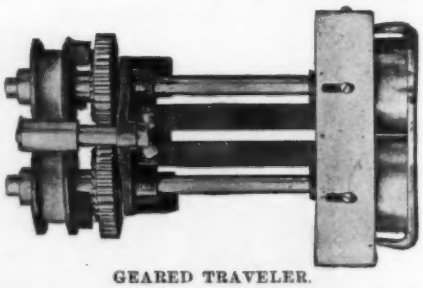

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We also manufacture Kershaw's Geared Traveler and Improved Web Feed.

Garnett Machines and Pickers. Reclothing or furnish New Metallic Toothed Cylinders and Feed Rolls.

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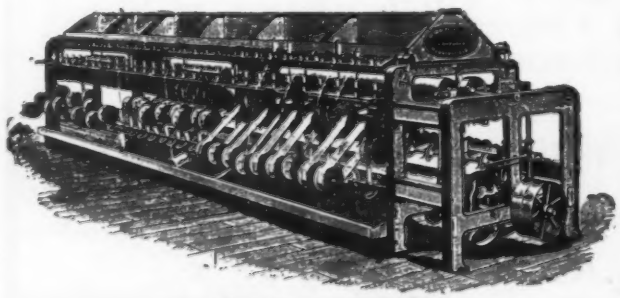

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Makers of all descriptions of Tentering and Drying Machines.

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These facts show that Economizers will now pay bigger profits than ever before. Any man owning a boiler plant should have this subject figured over again.

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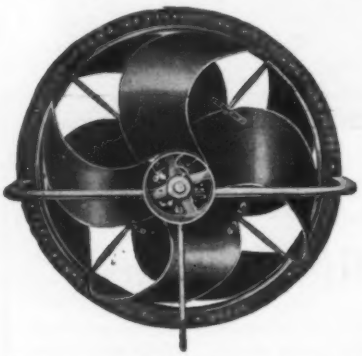
Barney Compound Ventilating Fans Ventilate, Purify, and Dry.



Notice the compound feature—it does the work. They force out all atmosperic impurities and draw in pure air. They often double capacity of drying rooms, expel loose steam from dye houses—preventing condensation, *cool spinning rooms.*

The Barney System is the most economical.

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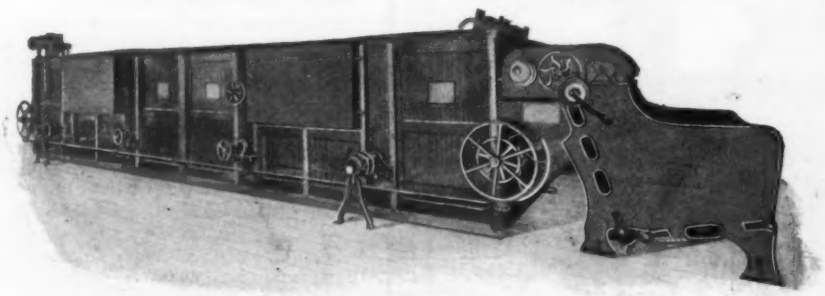

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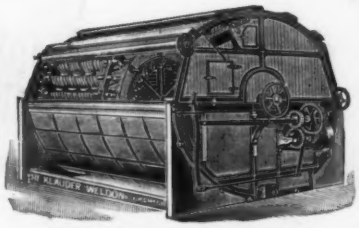

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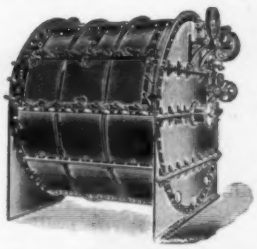
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



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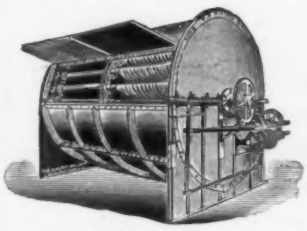

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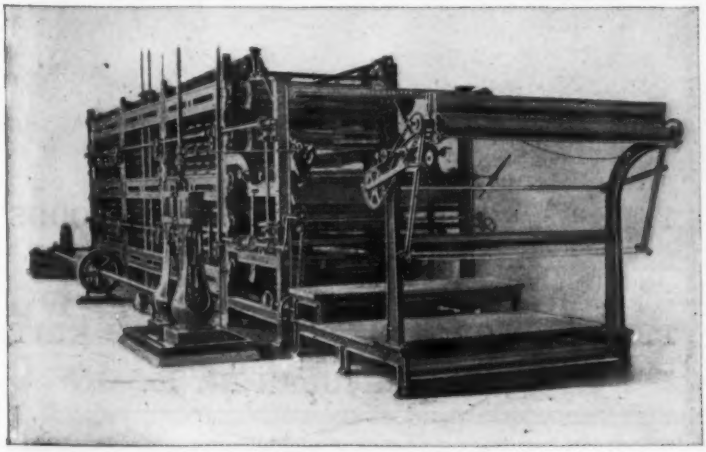
WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



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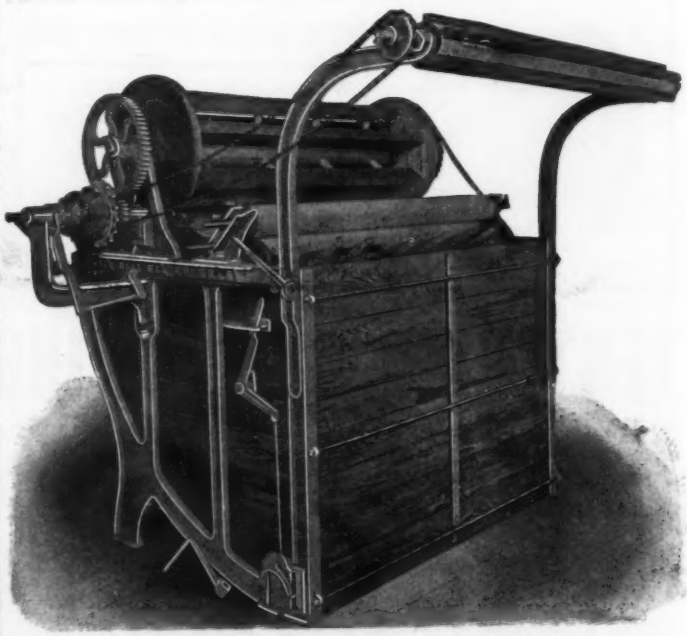

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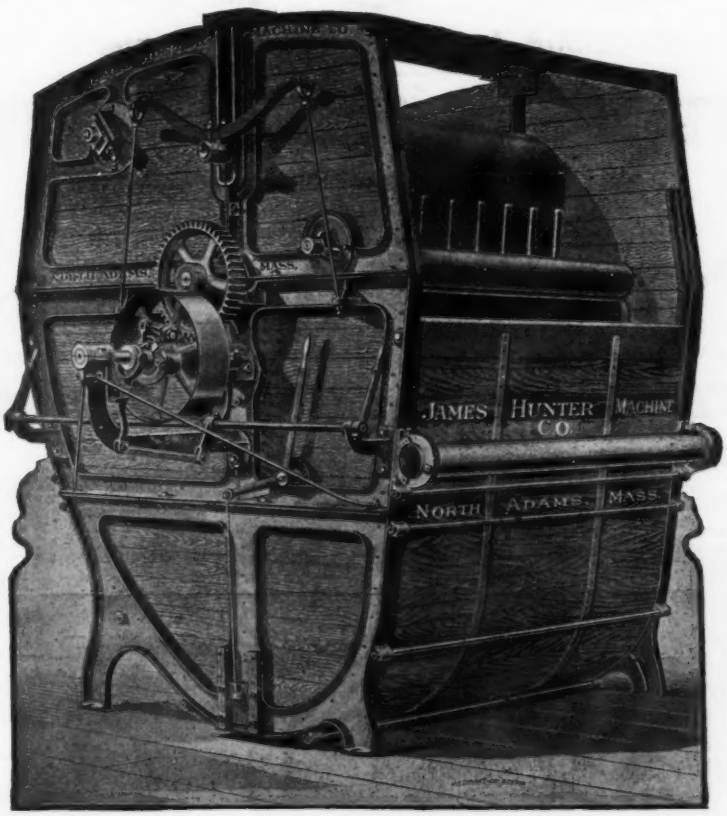

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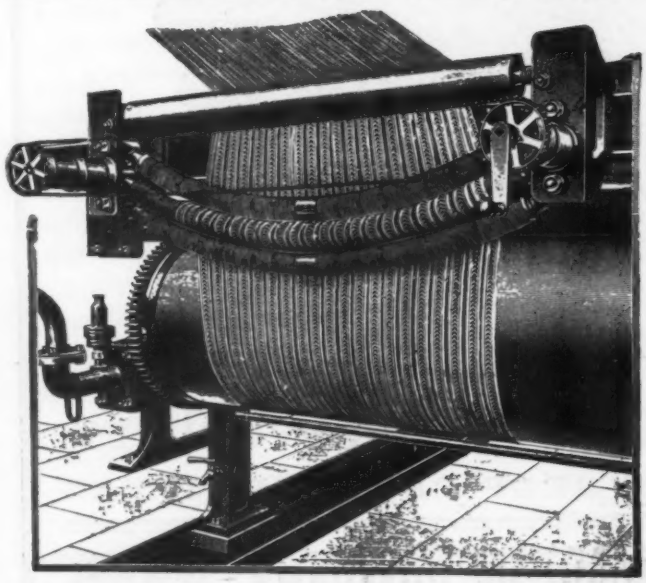

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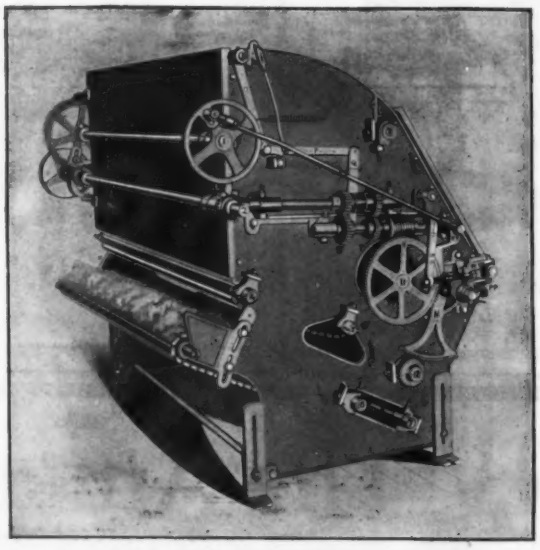

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The Hussong Dyeing Machine

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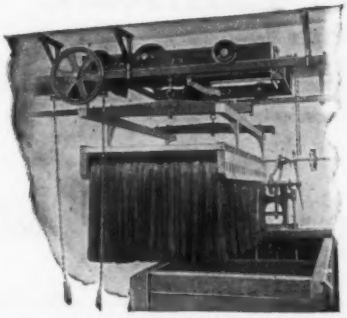
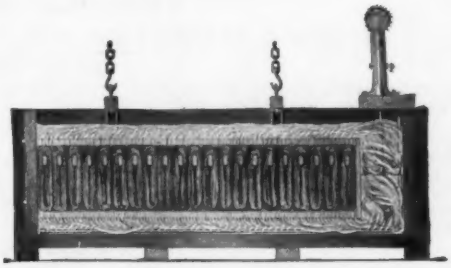
THE ONLY MACHINE THAT WILL DYE SUPHUR BLACK SUCCESSFULLY.



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine suspended.



Longitudinal Sectional View, showing the circulation of dye-liquor through the yarn when in operation

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff,
Saving of 75% in Labor, Makes No Waste Whatever, No Friction on the Material.
Requires but Little Power to Operate.
Leaves the Yarn and Slubbing it its Natural Condition.

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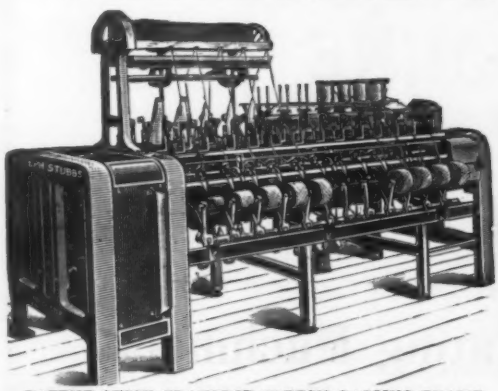
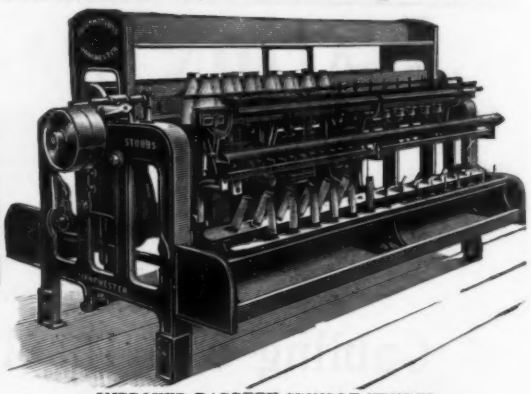


PATENT QUICK TRAVERSE COTTON GASSING FRAME.



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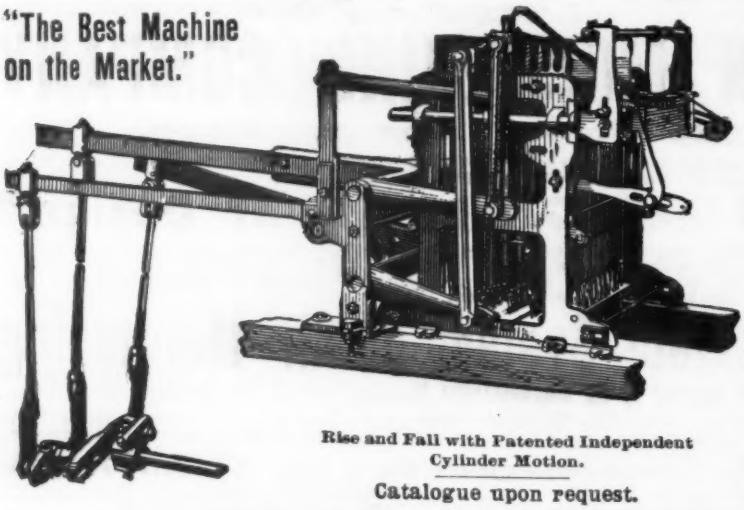

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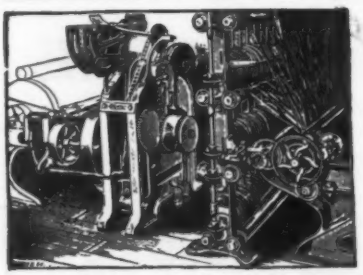

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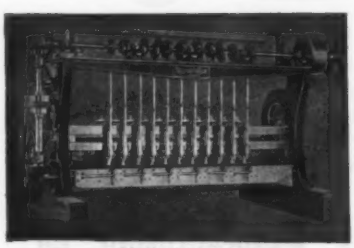

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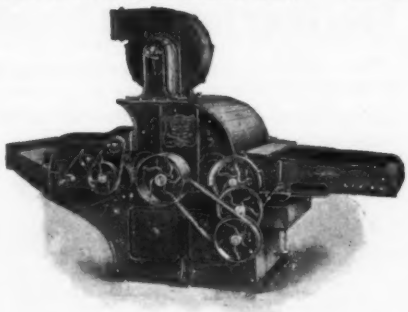

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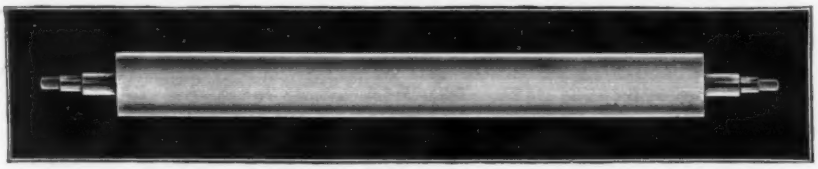

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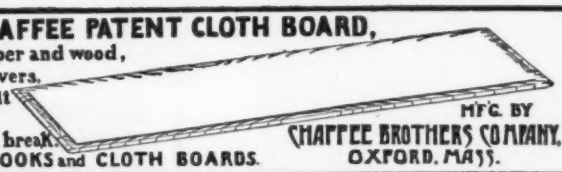

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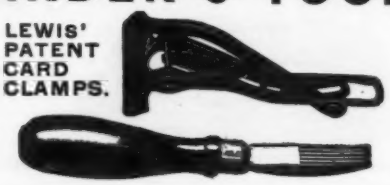
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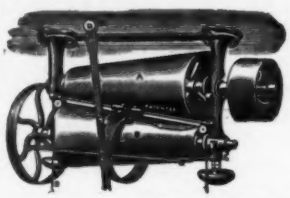

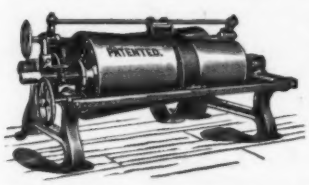

Smith & Winchester Co., So. Windham, Conn. 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 275 sets. Pacific Mills, Lawrence, Mass., 13 sets.

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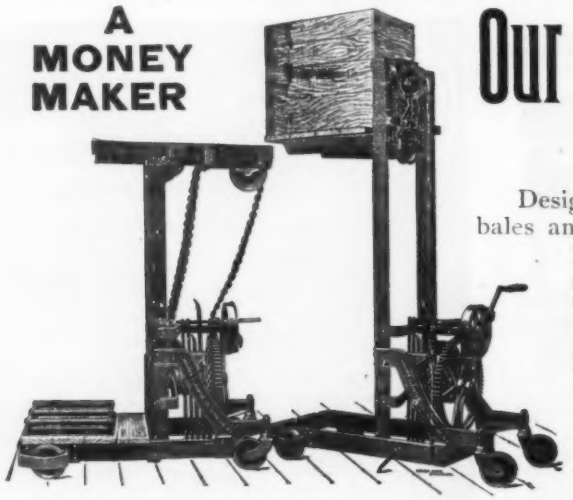

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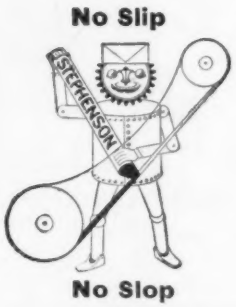

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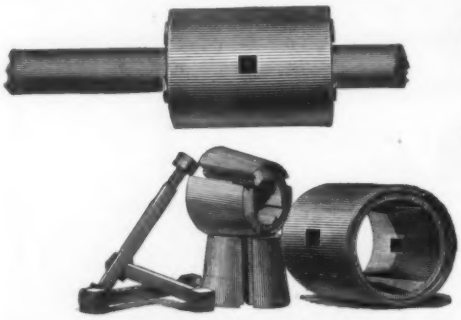

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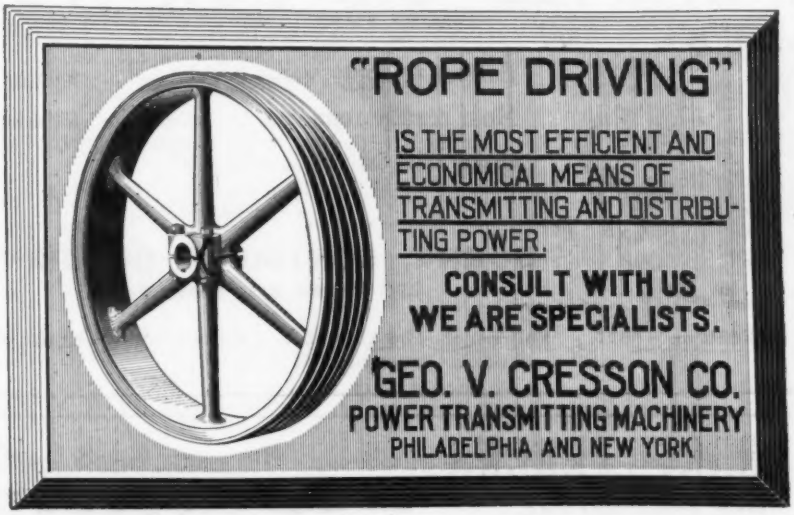
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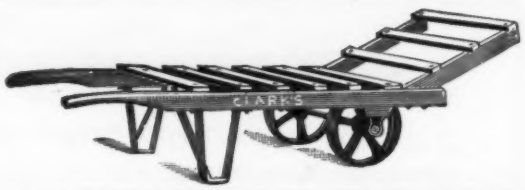

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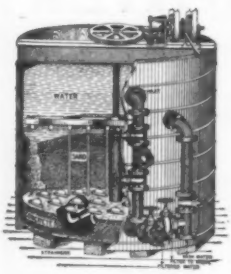

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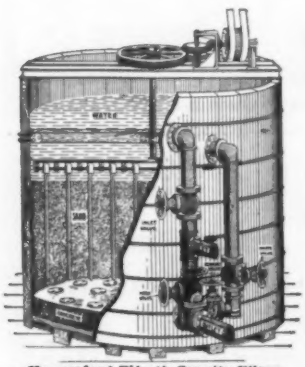

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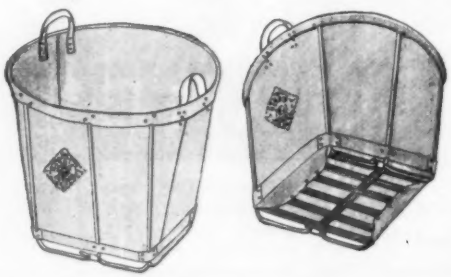

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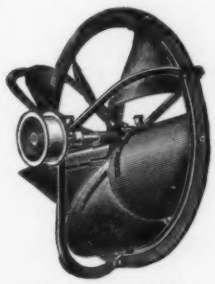

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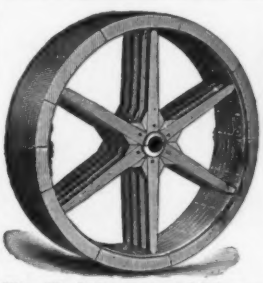

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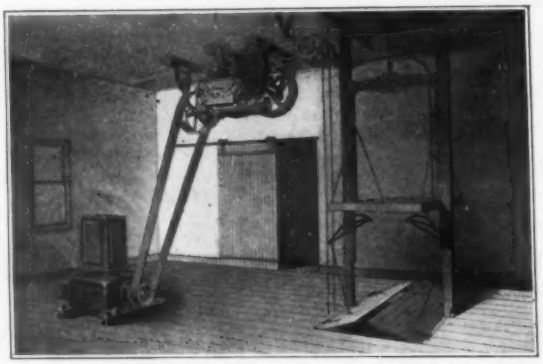

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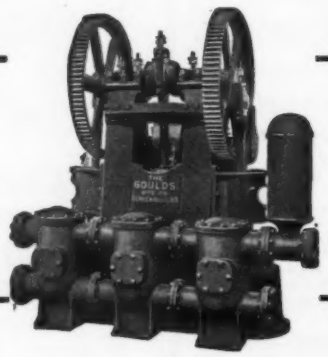

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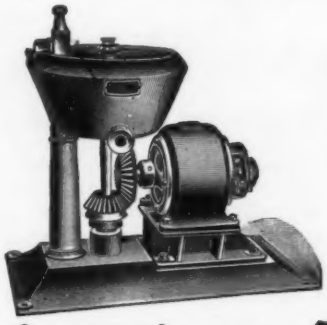

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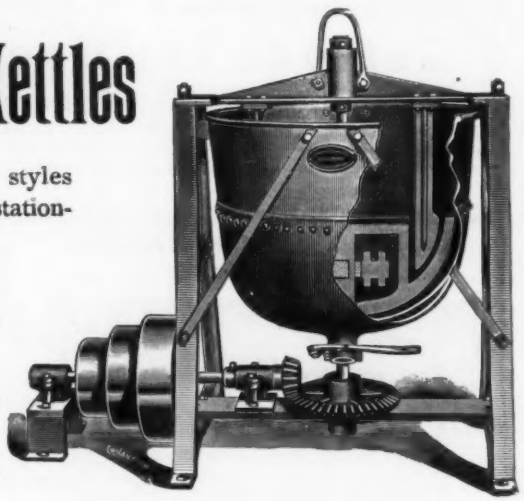

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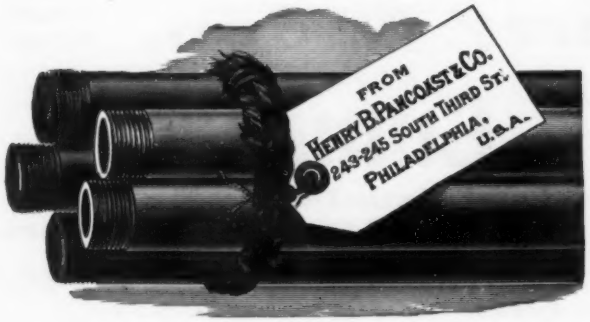

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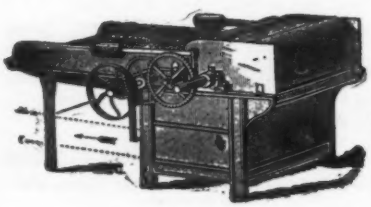

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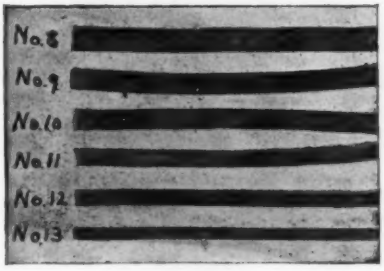

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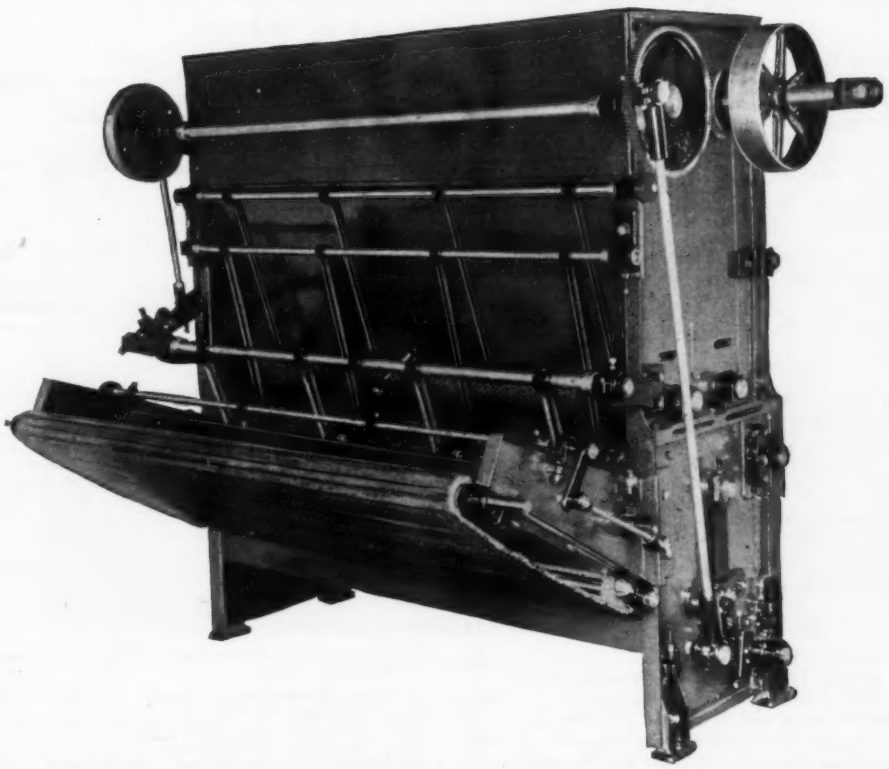

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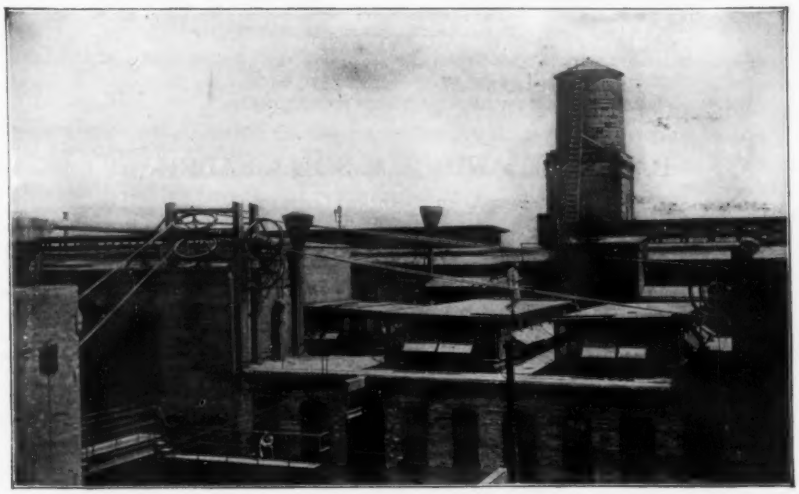

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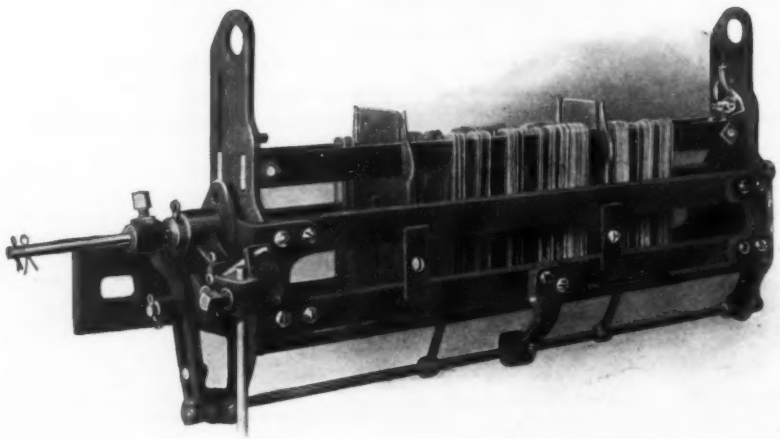

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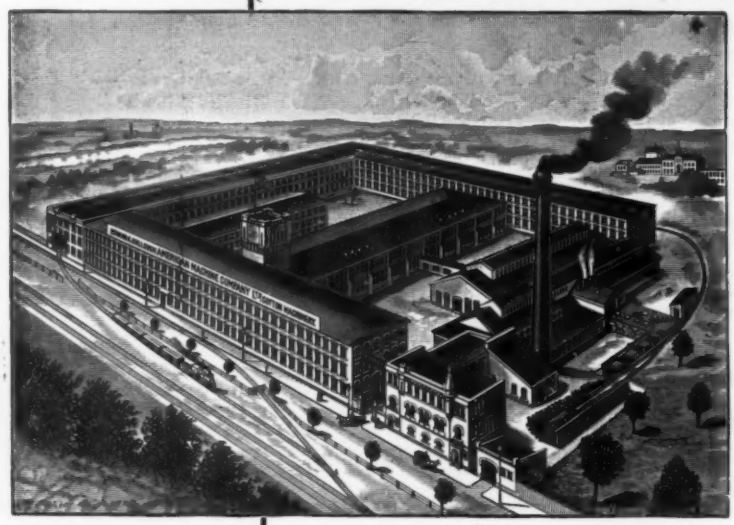

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Monthly Comment.

A Popular Error.

The absence of competition leads to carelessness, and this is largely the reason why, after years of complaint, the American cotton grower turns his bales out in such a disgraceful condition. American cotton growers are, therefore, in a safe position. They can pack just as they like, and they do pack as they like, regardless of loss and inconvenience to others. It will not always be endured, however, and the Americans are finding this out in other branches of the cotton industry. Complaints are made as to the way American cotton cloths and yarns are packed for the export trade; but here comes the difference. Other countries must have American raw cotton, but they need not have American manufactured goods.—Textile Manufacturer (England).

The error to which we want to call attention in the above extract is that the Southern cotton planter is responsible for the disgraceful way in which American cotton is baled. He is no more to blame for it than is the English spinner himself. The cotton is baled for the planter, not by him. He carries his cotton to the gin, where it is ginned and baled by a process over which he individually has no control. When sold it is transported to the compress and again pressed without regard to the planter's ideas of how it should be done.

In the packing of manufactured goods the conditions are entirely different. The cotton manufacturer packs his finished goods for the market himself. If it is improperly done he has the remedy in his own hands and can apply it without restraint from any one.

The present imperfect system of baling American cotton is the result of the development of the cotton trade during the last hundred and twenty-five years and today is maintained throughout the cotton belt by great vested interests that make reform exceedingly difficult. The planter is as anxious to have the methods of baling improved as is the cotton spinner himself.

Reciprocity with Germany.

The German press is giving unmistakable indications of the storm that is brewing over trade relations with the United States. It will be recalled that when the new German tariff went into effect last March, Germany granted to the United States the advantages of the most favored nation clause without receiving any equivalent in return. There were, to be sure, some vague promises made to Germany at that time that the United States government would endeavor to correct any defects in the administration of the Dingley act that might be unduly oppressive to German exporters, but such readjustment of details affected all other foreign exporters as well as the Germans, so that the concessions by Germany were in fact made

without receiving anything in return. This one-sided arrangement was to remain in force for one year from last March, and under it American goods imported into Germany were to be subject to the same low rates imposed on goods from Austria, Italy, Russia, Switzerland, Belgium, Roumania and Servia, countries that have paid for the concessions by granting low rates on goods imported from Germany.

Since the arrangement with the United States was made, Germany has negotiated a treaty with Sweden by which concessions are granted on imports of rubber shoes, wooden ware and wood alcohol, and there is a disposition in Germany to deny that the low duties conceded to Sweden should be likewise granted on the same class of goods imported from the United States. The ground for such denial of the most favored nation clause to us is that the Swedish treaty was negotiated subsequently to the concession made to the United States. If that construction is admitted it follows that the United States can claim only such lower rates as were conceded to other nations before March, 1906, and that by negotiating new treaties Germany can even under the existing arrangement place the United States among the least favored nations. The following extract from a recent issue of the Leipziger Monatschrift shows plainly how the Germans are chafing under the kangaroo species of reciprocity now existing between the two countries:

"After Germany conceded the minimum tariff rates to the Americans last February there appeared in the German press a series of articles showing in what spirit this exceedingly friendly advance had been received in America, and what a favorable impression it had made in all branches of American trade. Subsequent events have confirmed the fears expressed at that time. As a matter of fact the Americans have made merry over this additional proof that the German Empire had given of her yielding to America and her fear in the prospect of a tariff war. How niggardly the Americans are in tariff matters and how little they consider themselves bound to make reciprocal concessions are demonstrated by the fate of the bill before Congress for amending the Customs Administrative Act. Under such conditions we cannot understand how the German press can favor the proposal that America be allowed to participate in the advantages conceded to Sweden under the recent treaty."

The Result of Investigation.

At the Congress of the Chambers of Commerce of the Empire, held recently at London, a resolution was adopted asking the government to appoint a Royal Commission to investigate the question of weights and measures and make recommendations for the improvement of weights, measures and currency throughout the British Empire. A resolution in favor of the metric system was rejected by a vote of 3 to 1. This action is especially significant in view of the fact that British Chambers of Commerce have generally favored the metric system in the past. At the Congress of Chambers of Commerce, held in Canada in 1903, a resolution in favor of the compulsory introduction of the metric system in the British Empire was adopted unanimously. The change has been brought about by the investigation and discussion of the question during the past four or five years.

The Price of Jute.

The demand for jute has increased at a remarkable rate during recent years and, despite a large increase in the supply, has brought prices to a record level. A chart issued by Smith & Schipper, New York, presents very clearly the statistics of supply, demand and prices for the past ten years. In 1896, jute was quoted at 2.65 cents a pound landed in New York. In 1898, the year in which the price of cotton fell to 5 1/2 cents, jute dropped to 2.38 cents a pound. That is the lowest price on record. Since that time the quotations have fluctuated under the influence of the varying supply and demand, but the general trend has been upward. This has been especially pronounced during the past eighteen months. In 1904, the New York quotation was 3.04 cents. With the exception of a temporary drop in September, 1905, the market has since advanced rapidly until the record price of 6.15 cents a pound was reached in May of this year. The production has increased from 5,750,000 bales in 1896 to 8,200,000 bales in 1905, an increase of 43 per cent. The increase in the demand

can be judged by the fact that during this time, when the supply increased 43 per cent., the price has advanced 130 per cent. from 2.65 cents to 6.15 cents a pound. India has a practical monopoly of the growing of jute fibre and a large part of the crop is manufactured in that country. The following table compiled by Smith & Schipper shows jute consumed by the mills of different countries:

Great Britain	1,250,000 bales.
Germany	750,000 bales.
France	475,000 bales.
Austria	275,000 bales.
Russia	185,000 bales.
Italy	175,000 bales.
Belgium	125,000 bales.
Spain	90,000 bales.
Norway and Sweden	65,000 bales.
Holland	30,000 bales.
Total Europe 43.9%	3,420,000 bales.
Indian mills	3,400,000 bales.
Native consumption	400,000 bales.
Total Asia 48.7%	3,800,000 bales.
America 7.5%	580,000 bales.
Total	7,800,000 bales.

Dogs and the Wool Supply.

We have repeatedly called attention to the ravages of dogs among sheep and the effect of this nuisance on the supply of wool. The high price of wool at the present time increases the importance of finding some means to prevent the killing of sheep by dogs. Free traders point to the protective tariff as the cause of high wool prices and claim that with the tariff on wool reduced or removed altogether a great burden would be removed from the consumer by reason of the reduction in the cost of woolen goods. The experience under a free wool tariff from 1894 to 1897 showed how baseless was the claim. Woolen goods were cheapened, to be sure, but the purchasing power of the consumer was lessened in an even greater degree, leaving him worse off with cheap wool than with protected wool at a higher price. The plan to reduce the cost of wool by lowering the tariff must, therefore, be dismissed as deceptive and dangerous. With the dog nuisance, however, the case is entirely different. The sheep-killing dog is almost without exception a worthless cur. He produces nothing of value, but by his ravages among sheep causes a material reduction in the wool supply. The latest evidence to this effect comes from Nova Scotia and appears in the Halifax Chronicle:

> Wool has reached a record price in Nova Scotia. We see by advertisements in the Provincial newspapers that in Yarmouth County 30 cents per pound is being offered for it. In Colchester the home of one of the largest wool consuming plants of the Province, the price offered by advertisement is 33 cents per pound. Sheep raisers are the fortunate men just now.
>
> There is one menace to this most profitable industry that must be stamped out. In some few places wild animals are troublesome, but without exception all over the Province the dog is the worst enemy of progress in sheep raising. In almost every instance, too, it is the good-for-nothing dog often owned by irresponsibles, and under existing laws, it is practically impossible to get redress. While the house dog, and the true sportsman's thoroughbred should be protected, the sheep thieves and cut-throat beasts should by some effectual enactment be legislated promptly out of existence. We have no doubt that if sheep men, generally, would bring the matter to the attention of their representatives in the Provincial Legislature this menace would soon be removed.
>
> John A. Scott, of St. Croix, Hants Co., who has been trying to increase his valuable flock of Oxford Down sheep, was the victim of the dog nuisance this month. During one night twelve of his most promising lambs had their throats sucked by vicious roaming dogs. He was unable to secure definite evidence, not having actually seen the depredation, and the present Dog Law gives him no redress.
>
> John P. Kelly, of Stanchel, had a visit from dogs a few nights ago and lost fourteen sheep and ten lambs. Needless to say Mr. Kelly is feeling sore as he has no redress under existing laws because he cannot prove whose dogs or which individual dog did the work. Mr. Kelly suggests a law compelling owners of dogs to keep them confined on their own premises from seven o'clock in the evening until six o'clock in the morning under fine of $25.00.

On one point the reporter who wrote the above news item is doubtless greatly mistaken. Human nature is the same in Nova Scotia as in the United States, and there as here it will be found extremely difficult to pass an effective law against the sheep-killing dog. Legislators may be induced to vote for pure food laws, railroad rate bills and meat inspection

acts, but they shrink with horror from the possibility of being called to account by their constituents for having voted to suppress the common cur. It is well, however, to make clear the chief reason why wool is dear. It is not the tariff; it is not the drouth in Australia; it is not the disappearance of the extensive sheep ranches in the West. It is the worthless sheep-killing dog.

Trade with New Zealand.

During his recent visit to the United States, Sir Joseph G. Ward, the new premier of New Zealand, talked for publication on the trade relations between New Zealand and the United States, and expressed a desire that a treaty of reciprocity be negotiated between the two countries, his views on this point being summarized as follows:

Sir Joseph also discussed the tariff and the Panama Canal. He believes in reciprocity and is willing to enter into an arrangement with the government of this or any other country that will give New Zealand a quid pro quo for any favors extended.

In connection with this suggestion of reciprocity with New Zealand the following comparative exhibit of the area, population and trade of that country and the United States is of interest.

	New Zealand.	United States.
Population	1,000,000	85,000,000
Area	104,751 sq. m.	3,567,563 sq. m.
Imports	$62,694,145	$1,117,513,071
" per cap.	$62.69	$13.14
Exports	$71,676,975	$1,518,561,666
" per cap.	$71.67	$17.86
Wool exported	144,647,376	none
" imported	none	203,548,608

For a really reciprocal trade arrangement between the two countries it is essential that allowance be made for the difference in the value of the two markets. New Zealand seeks a market for her products among 85,000,000 Americans; she can offer in return a market among only 1,000,000 New Zealanders. Thus rated by the number of consumers our market is worth eighty-five times as much as that of New Zealand. This disproportion makes it impossible to obtain real reciprocity by balancing reductions in schedules. A reduction of 10 per cent. on duties on New Zealand goods imported into the United States might be worth more to New Zealand than the free importation of American goods into New Zealand would be worth to us.

There is another important consideration, New Zealand is a low tariff country. Moreover she has granted Great Britain a preference, which lowers her already low duties. In the official New Zealand Year Book we read:

The duties are levied by specific charges of varying amount and by ad valorem charges from 5 to 40 per cent., 37 1/4 per cent. of the total imports were admitted free.

Forty per cent. is considered a high rate of duty in New Zealand, whereas under the American tariff such a rate is low. The difference between the two tariffs accounts for the fact that New Zealand's per capita rate of imports is $62.69, while the American rate is $13.14.

New Zealand, like Canada, has already given foreign countries the benefit of a very low tariff and has very little left with which to purchase reciprocal concessions from them. She can give us but a very small quid for our very large quo. Leaving generalities, Sir Joseph discussed the details of the proposed arrangement as follows:

"There are many things which America could take from us," he said, "and without coming into competition with your own industries. Take, for instance, wool. We produce a grade of wool that can be found nowhere else, and which you want. You buy it now, but have to pay a high tariff on it. On the other hand, you have certain kinds of timber that we need, and which we would buy if we had not a high tariff on them. At the present time New Zealand has a preferential tariff with the mother country, but there is nothing to prevent us from entering into a similar arrangement with any other country in the world."

The new premier shows a surprising lack of information by his statement that New Zealand wool would not come in competition with any American industry. Our domestic wool clip amounts to 320,000,000 pounds, or double the New Zealand clip. A duty of 11 cents a pound protects our wool growers against foreign competition and gives them prices from 30 to 40 per cent. above what New Zealand growers get for their wool. Sir Joseph could not have named a product that would come more directly in competition with a domestic industry than wool does, nor could he have mentioned one on which there is greater agreement in favor of maintaining the protective duties.

The Scarcity of Labor.

The further development of the textile industry in the United States is checked by a scarcity of labor with which to operate the machinery. For the last two years a large part of the machinery already installed has been forced into idleness by this scarcity of operatives. Many have left the mills to engage in more congenial or more profitable employment in other industries that are sharing in the present phenomenal prosperity. This scarcity is not confined to any particular section, but extends to every mill in the country. It accounts for the recent general increase of wages in the North and for the reduction of working time in many Southern mills. In the South wages have been advancing steadily without attracting public attention. Every manufacturer has sought to remedy the scarcity of operatives by raising wages wherever the shortage was most acute. This has been going on so steadily and quietly that the Southern manufacturers themselves are surprised by the extent of the advance disclosed by comparing present wages with those paid two or three years ago. One of them recently told us that he was paying ring frame spinners more than is paid for the same work in Fall River and 40 per cent. more than he paid two years ago.

Moreover the increase of wages has not been accompanied by any increase in the labor supply, because employers of labor in other industries have made still greater advances, and in many cases higher wages have led the operatives to work less time. This scarcity of labor has been called an evil by some. Doubtless to the individual who has invested his capital in land, buildings and textile machinery and finds the cost of his product greatly increased by the decrease in production, the scarcity of labor is a great evil. But in the broader sense of the term is this great demand for labor an evil? That demand begins with the consumer, who is calling upon the manufacturer for finished products. To satisfy the consumer the manufacturer offers the producer, that is, the worker, in the form of higher wages a share in the increased price the consumer is willing to pay. Those of us whose memories go back to the dark days following the election of Grover Cleveland as president in 1892, find no difficulty in becoming reconciled to the present state of affairs. Then there were two men applying for every job; now apparently there are two jobs waiting for every man who is willing to work. Manufacturers then had no difficulty in getting help; they could not sell the product of their mills even when offered at less than cost. The result was heavy losses for all manufacturers, bankruptcy for many of them, and idleness, hunger and general wretchedness for the worker. Then our troubles resulted from general disaster; now they are the incidents of general prosperity.

Nevertheless it is desirable that even this disarrangement of production, incidental to prosperity, should be removed. The remedy is to be found in the increased use of labor-saving machinery and in an increase in the supply of labor. Both means are being adopted. In the North the increase of wages has relieved the extreme tension of the labor situation, and manufacturers, although still short handed, will doubtless find it possible to hold enough of their old hands and get enough new ones to keep the production up and the cost down to a paying basis.

In the South serious difficulties have arisen in getting new operatives into the mills because of the opposition of the old hands to the employment of the newcomers. Two incidents will illustrate this phase of the question. At the Riverside Cotton Mills, Danville, Va., the employment of a party of German weavers resulted in a general strike of the old hands, during which the Germans were insulted, stoned and otherwise maltreated. The result was, of course, that the German operatives left Danville for other places where they could work without being molested. Recently the Hope Mills Mfg. Co., Hope Mills, N. C., decided to start their No. 3 mill, which had been idle for the last year and a half. Not being able to get operatives in the neighborhood they employed a considerable number of unskilled Italians with the intention of having them taught by skilled operatives.

The result was a strike of the hands in the other three mills operated by this company.

These incidents at Danville and Hope Mills are doubtless indications of a general opposition among Southern mill operatives to the importation of operatives to supply the scarcity of labor. This opposition, however, can be easily exaggerated. Several Southern journals have denounced the Danville and Hope Mills strikers in somewhat intemperate language as an unusual exhibition of intolerance, calculated to injure the South by retarding industrial development there. While the interference by the Danville and Hope Mills operatives with the imported workers cannot be justified in any degree, such exhibitions are by no means confined to the South, but are illustrations of a common trait of human nature. That trait is found in the North and West, and is nowhere more pronounced than in Italy and Germany, the former homes of those who sought work at Hope Mills and Danville. It is but a few weeks ago that a party of Italians imported suddenly into an isolated New England mill village were subjected to practically the same treatment as that accorded to the Germans and Italians in Virginia and North Carolina. In the more populous mill districts of New England the influx of many races has resulted in a greater tolerance of new comers, but race prejudice is found among them all, and the history of New England supplies ample proof that the early settlers were no exception to the general rule.

Moreover, the conditions in the South doubtless make it somewhat difficult for the mill workers there to exhibit that broad spirit of tolerance that we all preach far more than we practice. For thirty years the development of cotton manufacturing in that section has been phenomenal in its rapidity, and not only the North, but Europe as well, has lived in fear of Southern competition. Raw material, machinery, mill supplies and transportation cost as much in the South as in Europe or in the North. The difference in the cost of Southern fuel was so small an item as to be negligible in the reckoning. The ability of Southern mills to produce goods at a lower cost than was possible elsewhere could be accounted for only by the fact that the Southern mill operatives worked longer hours for lower wages. The surplus of labor that made those conditions possible no longer exists. In its place there is a pronounced scarcity which the operatives have been quick to use as a means of securing higher wages. Under such conditions what is more natural than that the Southern operatives, just as they are adapting themselves to the improved conditions, should resent the importation of aliens, which they look upon as calculated to restore the conditions of the recent past? The importation of large bodies of alien workers subjects any community to a serious strain and especially under the present conditions in the South. The Hope Mills and Danville strikes illustrate this fact and will doubtless lead to a more gradual introduction of operatives from abroad. The demand for labor is there and it will be supplied either from the inside or the outside. The opposition of the old help cannot prevent that result.

Mill Promotion.

An interesting phase of the present boom in cotton mill building in Lancashire is the investment by operatives who are induced to put their savings into new mill enterprises by the promise of employment, and higher wages than can be earned in the older mills. A correspondent of the Manchester Guardian recently referred to this matter as follows:

> Strange proceedings are reported in connection with certain of the new cotton mills. Some of them are not being "gaited" as fast as they might have been, and the reason assigned for this delay is interesting in these days of promiscuous mill promotion. The explanation is, a competition has arisen among the managers of the new concerns as to which can get the most money out of those seeking employment there, either by way of investment in shares or by loans, mostly at the rate of 5 per cent. interest.

It is stated that when a new mill is started the first pair of "wheels" (mules) is speeded so as to enable the spinner to make exceptionally high wages. The amount thus drawn on pay-day is widely advertised by the promoters, with the result that operatives in the older mills become dissatisfied with their

wages and apply for work in the new plants. This they can do only by subscribing to the stock of the new mill. On this point the Guardian writer says:

It is said that at what is considered the best of the new mills in a certain area the lowest sum to get a pair of wheels is £200. "Why," said an operative, "dosta knaw that at ——— mill some o' them chaps theer has as mich as £300 in. Ay, one mon has £400; an' it's said—an' I'd believe owt neawadays—as a chap theer—theau knaws him if I were to mention his name—has £500 in!"

Such are the stories going the round. Naturally they excite the people. The amounts invested vary from £5 or £10 to the very much larger sums, and those poor fellows who happen to be out of work and penniless may be thankful that there is now a great demand for skilled labor.

On Saturday afternoons some of the new mills are put on exhibition; anybody can go through them. Perhaps they are a quarter filled or half filled with machinery. These exhibitions are particularly where the "wheels" are long, the rooms high, spacious, and well lighted, and where there are other advantages to make the place inviting to workpeople and tradesmen with a few pounds to invest.

Very often the average production of the machines in a new mill falls far below the product of the first pair of "wheels." The operative-investor in the new mill then finds himself earning less wages than in the old mill and his earnings invested in mill stock that cannot be converted into cash. Thus:

Sometimes these big investments—big for workpeople—have not been altogether satisfactory. The new mill has been started badly. The cotton has been "rotten," the roving likewise, and the spinning bad. Consequently the work has been trying, tiring, vexing, and the wages low. As one minder said, "I were offer't three-fifteen when I invested my money, an' I hannot made mooar nor th' odd fifteen yet beyond my piecers' wages." Perhaps he was "stretching" a bit—had got dissatisfied and irritable and was prepared to say anything. But it is a matter of fact that some minders, drawn by the golden bait of £3 and £4 per week, have been glad to make £2, and have had to work like blacks for that. At one of these mills a minder remarked: "It looks weel; I ne'er seed a finer mill; bur it's been promoted on such conditions that t' management is nowt to speik on. I bin here seven week neaw, an' I not made mooar ner 34s. a week; fancy 34 shillin' on a pair o' fine wheels like these!" They were exceedingly fine "wheels," in the splendid room of a magnificent mill—quite a palace compared to the older, darker, lower type. Of course an improvement was expected in the earnings every week, but it had not come.

"We're just as badly off at eawr place," said another minder. "Tha knows, if tha gets a manager —selected 'cause he put a lot o' money in it—what connot tell a good staple fro' a bad un noather lung wheels ner short wheels 'ull mak good money!"

The present extension of mill building in Lancashire is possible because of a combination of favorable conditions, a brisk demand for goods, and a large supply of capital and labor. There are indications that the supply of skilled labor is becoming exhausted; the exploitation of the operatives as investors indicates that those controlling capital in large amounts are not viewing the present rapid pace in mill building with entire approval.

Production and Cost.

"Production is the divisor that determines cost." This sentence, which is found in an announcement of a 5 per cent. wage dividend to the employes of the Bourne Mills at Fall River, Mass., should be adopted as the motto of every mill manager. The Bourne Mills have for years distributed to their employes a proportion of the profits, the latest being the thirty-third dividend. That part of the circular referring to the profit-sharing scheme is as follows:

We have never seen any reason to regret the step taken. Of course you all understand that we seek and expect results and greatly appreciate your co-operation. It is a time when much depends on faithfulness and efficiency, which we are glad to recognize and reward. I rejoice with you that Fall River today again takes the advanced position of paying the highest wages known to the cotton industry in all the world.

Low wages are a poor shift for bad times. Higher wages were truer economy. This has been demonstrated in our midst. Production is the divisor which determines cost. I am convinced that in many instances in Fall River the net costs, except cotton, have been greater since the reduction of July, 1904, than before under the old scale. I am paying you this dividend in gold. I wish it may give you as much gladness to receive it as it gives me to pay it to you; there is one way in which it will, and that is to accept it with a determination to endeavor to deserve as good a one next Christmas.

Recent events in New England and elsewhere indicate that the Bourne Mills are but voicing the general sentiment among manufacturers by recognizing the vital character of a large production in reducing the cost of the finished goods. There is, of course, a limit beyond which an increase of wages would result in an increase in cost. The conditions that have existed in American cotton

mills for some time were such, however, that an increase of wages meant a decrease in the cost per finished unit. Production has for some time been seriously reduced by a shortage of help to run the machinery. In the demand for labor the mills are forced to compete not only with each other but with other than textile industries. "Production is the divisor that determines cost," and the advance in wages was the only means by which this divisor could be increased and the quotient, cost, reduced.

The Consumption of Wool.

In the absence of reliable statistics of the domestic wool clip it is impossible to obtain more than a general approximation of the consumption of wool in the United States. The imports of wool and woolens are, however, reported carefully and as they have for several years been very uniform in quantity may be safely assumed to represent the present rate of consumption. Assuming that each dollar's worth of imported woolens represents three pounds of grease wool and accepting the National Association of Wool Manufacturers' estimate of the domestic clip, the total consumption stands as follows:

	Grease. Lbs.	Scoured. Lbs.
Domestic,	295,488,438	126,527,121 (40%)
Imported,	271,680,360	190,176,252 (60%)
Total,	567,168,798	316,703,373

According to this estimate the annual per capita consumption of scoured wool for the 85,000,000 inhabitants of the United States is 59 ounces. If manufactured without the admixture of other material this would give each person 41 ounces or about 2 1/2 yards 6/4 of light weight cloth per year. This is manifestly far below the amount of cloth used, the deficiency being supplied by the use of shoddy, cotton, silk and other textile materials. Small as this per capita allotment of wool may seem, it is large compared with the world's average consumption, which has been estimated at 13.2 ounces, or less than seven-eighths of a yard 6/4 per capita.

The English Chemical Industry.

Recent reports by various British chemical companies and the reports of exports of chemicals show the manufacture of heavy chemicals to be in an unusually prosperous condition. The exports (including dyes) for the current year to May 31 amounted to $33,221,735, an increase of $1,468,487 over the preceding year. The home demand is as good, and as a result the net profits of four of the leading British companies show increases as follows:

	1905.	1904.
Borax Consolidated	$1,234,556.64	$1,216,312.20
Brunner, Mond & Co.	3,423,719.34	2,976,910.38
Castner-Kellner .	334,596.42	254,459.88
United Alkali	2,072,498.40	1,696,397.58

The friendly relations existing between British and foreign chemical companies is considered to be the principal cause for the present healthy condition of the trade. It has prevented ruinous competition and resulted in effecting many economies to the benefit of both producer and purchaser.

Textile Trade with Cuba.

A recent report of the American minister at Havana calls attention to the slow progress made by the United States in supplying the Cubans with textiles despite the preference of 30 per cent. on imports from this country. The bulk (54 per cent. in 1904) of the textile goods used on the island is supplied by Great Britain, and the reasons given are as follows:

Cuban wholesalers state that there is generally little difference between American and English prices, and that in some cases the English goods are even slightly more expensive. They attribute the insignificant American sales to the failure of American manufacturers to cater to the Cuban market. Widths, weights, colors and designs are made to suit the home trade, and unless the foreign buyer is willing to handle such "stock" articles the sales in the United States are possibly so profitable that rather than change their methods to meet his specifications the manufacturers prefer to let him make his purchases abroad.

In England, however, the mills make goods to order, are willing to meet their customer's wishes in every way, and to supply him with the articles he requires, taking it for granted that he is capable of judging the needs of his local trade.

The dealers admit that an extension of the re-

ciprocal concessions at present in force would increase American sales, but state that this would be due not to their ability to supply the market at the rates charged for similar and equally desirable articles, but to the fact that they could afford to dispose of the goods at greatly reduced prices. Knit goods comprise 25 to 30 per cent. of textile imports. The use of Egyptian cotton, highly valued by the Cubans on account of its color and long staple, and the system of straight or direct weaving used in England and on the Continent, which is preferred to the American circular or rotary method, with its stretch in the broader portions of the garment or stocking, are responsible for the large preponderance of foreign over American sales in this branch of trade.

In 1904 Great Britain's exports of textiles to Cuba amounted to $3,726,118, as compared with $504,428 from the United States. The following year, 1905, the British exports were stationary at $3,734,161; and the American increased 68 per cent. to $848,532. The United States is, however, still far behind England in the Cuban textile trade.

Silk Dyer's Combine.

The tendency toward industrial combination is world wide. The latest example is a combination of silk dyers, which, though formed in Germany, is international in its scope, including, as it does, the leading silk dyers of Lyons. A large part of the work done by foreign dyers consists of dyeing goods that have been imported for that purpose alone and that are intended for export when finished. Thus an American dealer in silks may order grey goods in Japan to be shipped to Lyons to be dyed and then shipped to the American destination. The new combination of dyers includes forty-seven firms, twenty from Krefeld, twelve from Barmen, ten from Elberfeld and two from Ronsdorf, besides the three following firms in other countries, Gillet et fils, Lyons, Josef Schetty, Basel, and Aug. Weidmann et Cie, Talwil. The three last named are said to be the largest silk dyers in the world. The circular announcing the formation of the combine gives notice of an increase in the price list for dyeing on all grades of goods, the new rates to go into effect on Aug. 1. Those customers that agree to give all their work to the combine are to receive a rebate of fifteen per cent. The members bind themselves under heavy penalties to give no other discounts and to conform to all the regulations of the combine.

Cotton Goods in the Philippines.

The report of cotton goods imports into the Philippines for the year 1905 shows the United States occupying third place in supplying this class of merchandise to the Filipinos. The showing, however, gives some encouragement when compared with the statistics two or three years ago when we were fourth or fifth on the list. The figures for 1905 are as follows:

Great Britain	45.0%
Spain	14.3
United States	11.4
Switzerland	6.5
British E. I.	5.4
Germany	4.2
Japan	3.2
France	1.3
Other	8.7
	100.0%

The Baling and Grading of American Cotton.

The establishment of an official bureau by the Japanese government for inspecting the silks known as habutai and certifying to their quality suggests the question whether the aid of the United States government could not be invoked in grading American cotton and preparing it for market. If the government inspects and certifies to the quality and condition of food products, why not do the same for cotton? Already the government exercises a detailed oversight in the production of cotton. It maintains extensive experiment stations for improving the cotton fibre and increasing the production; supports an elaborate system of crop reports by which estimates of acreage, condition of growing crops and yield are periodically issued, and gathers statistics of the cotton ginned. In view of what is already done an extension of official activities to the improvement of present methods in preparing cotton for market does not appear to be a radical proposition in any sense of the word.

Cotton and Free Trade.

English free traders are protesting against what some of them think is the intention of European cotton spinners to guarantee to the American planter a minimum price for his cotton. The plan to which they object was outlined by C. W. Macara, president of the International Cotton Federation in an interview to Reuters upon his return from the Bremen Congress, and in which he said:

There is no doubt that the American growers are in a much stronger position financially than they have ever been previously. Nowadays they need not dispose of their cotton to the first bidder as soon as it is picked. They can afford to hold it. And bear in mind that cotton, unlike many other products, can be kept for years without deteriorating in quality. This holding power may have an important influence in steadying prices and preventing those rapid fluctuations which have been the most crying evil of the past. The maintenance of the price at a minimum of 10 cents a pound is the aim of the growers, and while that is an exceedingly profitable price, I do not think we shall grumble about it. The users of cotton desire that the growers shall be fairly remunerated, believing that this is the best means of securing an adequate supply.

What is important to both is that there shall be no room available for the cotton gambler. Spinners could still further strengthen their position if they were to secure a reserve of cotton by joint purchases among themselves. This reserve, which would be in the nature of an insurance, they could place upon the market in case of emergency. The idea is not new. It was advocated at the first Congress two years ago, and I think spinners will ultimately recognize that this is a practical scheme which will have a great effect in steadying prices and checkmating professional gambling operations. I attach much weight to the promise that users of cotton in America are prepared to co-operate in these and other matters with European spinners, a fact which gives still further proof of the power and influence of international organization.

In reply to this the following letter appeared in the Manchester Guardian:

Sir,—Mr. Macara, chairman of the International Cotton Federation, in the course of an interview with Reuter's Agency, outlined some of the proposed methods of dealing with the cotton supply problem. He stated that the desire of the American planters was the maintenance of the price of cotton on a basis of 10 cents per pound, and with this desire he seems to be in sympathy, and thinks it would be well for the world's spinners to support any scheme having such an object in view.

Surely in a country that has given its vote for Free Trade the sympathy with such a movement will be nil. We who do not protect our own products are asked to lend our support to another country in the protection of theirs. If Mr. Macara has come to the conclusion that the aims of the British Cotton-growing Association are hopeless of realization he should say so. It is estimated that with cotton at 6 cents the planter can grow at a fair profit. The chairman of the International Cotton Federation seems to favor the leaving of the supply of an article of world-wide consumption in the hands of the tender-hearted American planter who is bribed to the extent of 4 cents per pound, may, so Mr. Macara thinks, be trusted to do "his best" for the trade.

Apart from the absurdity of such a proposal, it will be better to leave the question where it is until such time as the supply shall equal the demand on a basis of 3 1/2d. per lb.

Both interview and reply show astonishing misapprehension concerning conditions in the American cotton trade. Mr. Macara says he "attaches much weight to the promise that users of cotton in America are prepared to co-operate with English spinners" in guaranteeing a minimum price to the planter and forming a gigantic cotton pool by which spinners will own a large reserve of cotton to be thrown on the market to break prices and "checkmate professional gambling operations."

What is this "promise" to which Mr. Macara "attaches much weight," but to which he so vaguely refers? Presumably it was given at the recent Bremen Congress, the proceedings of which were secret. There was at that Congress one representative from the National Cotton Manufacturers' Association. We cannot believe that this gentleman pledged the American cotton trade to such schemes. Buying and selling cotton and fixing a minimum price to the planters are wholly outside the province of either of the two American cotton associations. Neither is it conceivable that the American representative at Bremen undertook to speak with authority for the American spinning industry. Such a pledge would have no effect. Doubtless Mr. Macara has misconstrued some assurance of American co-operation with Europe on practical lines. The incident illustrates perfectly the folly of secret sessions at cotton congresses. If what the American representative said at Bremen were known the trade could decide whether Mr. Macara is attaching undue weight to it or not.

As to the merits of the two schemes mentioned by Mr. Macara little need be said as both are beyond the limits of practical affairs. The price of cotton is fixed ultimately by the supply of raw cotton and the demand for cotton goods. There are too many individual planters and too many spinners to make an agreement between them possible. But even if there were but one planter raising all the cotton and one spinner spinning all of it the price would be fixed finally by the supply of cotton and the demand for goods. The two might agree on a minimum price, but that agreement would be of no effect if the supply became so large and the demand for goods so small as to warrant a price below the minimum.

The international cotton pooling scheme is equally visionary. It is in effect a plan to collect a large stock of cotton for the purpose of selling it in order to depress the price not only of this cotton, but of all other cotton throughout the world. The supporters of this pooling scheme lose sight of the fact that buying the cotton for the pool would in itself raise the market price, and that selling it could not depress prices to any greater extent than buying it had increased them. The amount of cotton controlled by the pool could not be kept secret, and consequently the international pool would be helping the bull speculator by relieving him of the necessity of carrying just so much cotton. The knowledge of how much cotton was held by the pool would enable the speculator to provide for such an event as its being dumped on the market to break prices. The international pooling scheme would convert the world's spinners into a vast speculative corporation for fighting the individual speculator at his own game. On one side would be a million men widely scattered over the surface of the globe; on the other would be one daring and skilful speculator. In such a contest the odds would be against the million, who would lack the essentials to success possessed by their individual opponent, singleness of purpose, rapidity of action and an adventurous spirit that is deterred by no risks. Possibly Mr. Macara will reply that these essentials can be supplied to the international pool by placing the management in the control of one man. But would the world's spinners consent to that? Could an honest man be found to assume such a heavy responsibility? Is it the plan to place the management of this pool in the control of the International Committee, of which Mr. Macara is chairman?

As pointed out by the writer of the letter in the Guardian, the minimum price scheme is in conflict with the principles of both free trade and protection. British free traders will have none of it, for it seeks to interfere with the free operation of supply and demand. British protectionists would likewise spurn this minimum price guarantee because it aims at protection to American instead of British industry. It is not only impractical; it is absurd.

While sound in his objections to the minimum price and pooling schemes favored by Mr. Macara, the writer in the Guardian in the closing paragraphs of his letter shows that he is ignorant of present conditions in the United States. He says, "it will be better to leave the (cotton) question where it is until such a time as the supply shall equal the demand on a basis of 7 cents a pound." The world is now using 16,000,000 bales of cotton on a basis of 11 cents a pound for middling uplands, and it is not unreasonable to suppose that at 7 cents 20,000,000 or even 25,000,000 bales would find a ready market. Three-quarters of the present crop comes from the United States, the only country in which conditions of soil and climate make any considerable and rapid increase of production possible. Something more than the right soil and climate is necessary, and that is labor. Production in the cotton fields, and in many other industries of the United States has reached the limit of the labor supply. The Southern planter is bidding against all the varied industries of the country to obtain labor for raising cotton. He is paying high wages and still remains short handed. The practical control of the world's cotton production possessed by the United States makes tariff protection on cotton of no effect, but indirectly the cotton grower is now enjoying the benefits of protection on his product. Protection has made our

present prosperity possible, has increased the demand for labor beyond the supply and made it impossible to raise American cotton except at an American price, that is, a price corresponding to that of other domestic products and based upon high wages to the worker. Under these conditions it is idle for foreign spinners to talk about waiting until cotton is again selling for 7 cents a pound. Unless a radical change takes place in the balance of labor supply and demand in America they will have to wait until the end of the Greek kalends.

Labor in Cotton Mills.

The publication in the Manchester Guardian of the total number of operatives in an English cotton mill of 80,000 spindles indicated so high an efficiency of labor as to excite in the mind of an Indian manufacturer a suspicion of the correctness of the statement. In reply the Guardian goes into details, showing the operatives required in an 80,000-spindle yarn mill in Lancashire, spinning 60s on mules:

Mixing room:	
Men	1
Women	2
Blowing room:	
Men	1
Women	3
Card room:	
Overseer	1
Strippers and grinders	6
Female tenders	8
Drawing frames:	
Tenders	10
Slubbing frames:	
Tenders	10
Indermediate frames	
Tenders	10
Roving frames:	
Spindle tenders	20
Back tenders	10
Mules (26 pairs, 2,200 spindles each):	
Overseer	1
Winders	36
Side piecers	36
Little piecers	36
Overlookers	2
General:	
Manager	1
Mechanic	1
Carpenter	1
Bookkeeper	1
Clerks	2
Cop packers	5
Yarn carriers	2
Waste man	1
Engineer	1
Fireman	1
Roller coverers	3
Total	212

This total of 212 hands for 80,000 spindles is equivalent to 2 1/2 hands per 1,000 spindles. The same journal gives the following list of operatives required for a Lancashire cotton weaving mill of 348 looms on plain goods:

87 weavers (4 looms per weaver).
18 winders (12 if knotters are used).
4 beamers.
2 sizers.
3 drawing-in hands.
2 plaiters.
3 cloth pressers.
2 loom fixers.
2 card cutters.
1 manager.
1 cashier.
1 clerk.
1 cloth checker.
2 warehousemen.
1 engineer.
1 fireman.
1 designer.
1 carpenter.

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This is equal to 38 operatives per 100 looms.

The consumption of raw cotton in Mexico is estimated to be 100,000 bales annually.

It is estimated that for the year ending September 30, 1905, there were exported from Great Britain over six million yards of cotton goods and 196 million pounds of yarn.

Questions from the Texas Cotton Fields

Sulphur Springs, Tex., July 18, 1906.

Editor Textile World Record:

In view of the fact that at the International Conference of Cotton Growers and Manufacturers held at Washington on May 1, 1906, it was decided that a definite system of preparing and marketing cotton should be developed by which the manufacturer can receive the cotton from the producer, I wish to propound a few important questions. We desire a better understanding with the spinners. We desire stable, steady prices, and to protect American spindles. We believe it to be our duty to increase spindles so as to convert every pound of American cotton into cotton goods, as foreign spinners are trying to increase the cotton area in foreign countries. We are able to furnish the world with fifteen million bales of cotton. Now if we but knew that the price would remain satisfactory, we have the land and the labor and have no fears from the boll weevil when our business becomes steady.

1. Do the spinners desire to deal direct with the growers?

2. If so, would not Galveston be the point for concentration and delivery of cotton, this being the deep water port for the trans-Mississippi growers?

3. Will it not be impossible for spinners to take our cotton from the interior warehouses?

4. When cotton is drawn for the mills from points of concentration, is it not done by expert classifiers, and does not each mill consume certain grades?

5. Is not a fact that cotton types are prepared by the New York Cotton Exchanges to be used and to assist the classifiers in correctly drawing the specific class of cotton?

6. A cotton school has been established at Dallas, Texas, where it is proposed to give instruction in grading cotton, judging the staple warehousing, etc. Can an ordinary, inexperienced person become trained in four or five weeks to grade and classify cotton correctly? Would such classification satisfy the demands of the spinners?

7. Does the spinner favor the round bale press? If not, please suggest the character of bale wanted. I appreciate the fact that our cotton is handled shamefully. No person in New England is more familiar with the fact and the conditions than myself. Hence it is that I desire a change that will mutually benefit the spinner and the grower. Is it not possible to press the cotton once for all at the gin?

8. Is it not to the interest of the American planter and the American spinner to control American cotton?

9. If American cotton is controlled would not Americans be able to control foreign markets?

The United States furnished 14,455,994 bales of cotton in 1904; the United States spindles consumed 4,278,980 bales; the United States exported 8,835,334 bales; Great Britain exported $358,232,000 worth of cotton goods, or $7.16 per spindle; the United States exported $22,404,000 worth of cotton goods, or $1.01 per spindle. Why this condition? Why does not the United States manufacture the bulk of our cotton crop? It is my opinion that the American manufacturers, with the co-operation of the cotton growers, have the power to build up or wreck this, the most important industry in the world.

10. Is it not possible for the American growers and manufacturers to maintain a minimum and maximum price for cotton?

11. Will not the spinners co-operate with the growers in establishing a system of gathering, baling, housing, delivering and sampling cotton?

12. Can it be possible that American spinners have affiliated with the foreign spinners to embarrass the American planter? Time will reveal the true status.

As the meeting of the Texas planters takes place on August 7, and will be followed by county cotton mass meetings, I want all the facts relative to the proposition that we may take the most conservative course possible. We are deeply interested in the manoeuvres upon the market of C. W. Macara and Arno Schmidt of Europe, as well as those of J. A. Taylor and W. J. Neal of Texas.

Yours very truly,

A. P. Landers.

Mr. Landers' questions indicate an intention to improve the methods of doing business in the cotton trade. Such a desire on the part of both growers and manufacturers was plainly evident at the Washington Conference and we believe it is shared without any exception by growers and manufacturers in every part of the world. It was Mr. Landers' desire that his questions be published so that American cotton manufacturers could send him replies for the guidance of Texas planters at a meeting to be held on August 7. His letter, however, reached us too late for that purpose, but his questions deserve the careful attention of cotton manufacturers not only in this country, but abroad.

1. To his first question there can be but one answer. The spinners desire to deal directly with the planters, reduce the middlemen's charges and secure the many other advantages of direct dealing. The question is, How is this to be brought about? The wide distribution of the cotton fields, cotton mills and cotton markets makes the problem exceedingly difficult, and doubtless makes it impossible to bring every cotton spinner into direct relation with the planter.

Under the conditions the middleman must remain a factor in the distribution of cotton.

2. Doubtless Galveston will remain an important distributing point for cotton, but it is impossible to make any one place the center at which all the growers and spinners will meet for direct dealing. The size of the cotton belt forbids this.

3. The great area of the cotton belt, together with the impossibility of finding the grade of cotton wanted would make it impossible for spinners to buy their entire supply of cotton at interior points. Such buying is done, but only to a limited extent.

4. Each mill requires grades of cotton suited to the goods to be made. Selecting the cotton and judging the grade require special training.

5. The cotton exchanges must necessarily establish standards for the grades to be bought and sold.

6. It is impossible for an inexperienced person to become trained in four or five weeks, either in a school or elsewhere, to be able to judge the grade of cotton well. Such classifiers would not be acceptable to the spinners. In spite of this, however, such schools as Mr. Landers refers to may do good work by increasing the general knowledge of cotton and the requirements of the mills.

7. The round bale has been received with considerable favor by European spinners, but this is due in large measure to the wretchedly bad condition in which American cotton is delivered in square bales to European mills. What the spinner wants is a compact square bale similar to the Egyptian and Indian bales, and in which the cotton would be received at the mill in good condition. There must be greater density and better wrapping material. The present practice of frequent sampling is believed to be responsible for much of the present difficulty. The question of baling is thus closely connected with that of marketing. We suggest that sample bales of Egyptian and Indian cotton be placed on exhibition at the conventions of cotton planters in order to show how cotton should be baled.

8 and 9. These questions are rather vague, but in reply it may be said that the American planter does "control" three-quarters of the world's cotton supply at present. The other quarter consists of cotton that is so fine or so short and dirty as to make it largely non-competitive. Under these conditions the American planter should be very well satisfied with the "control" of cotton that nature has given him. As to the American cotton manufacturer he is chiefly concerned in "controlling" the best market for cotton goods in the world, a control that is now assured to him by the Dingley tariff. As to foreign markets he takes what he can get and has been fairly successful. In view of the cheapness and abundant supply of labor in foreign countries it is idle for the American cotton manufacturer to think about controlling the trade in manufactured cotton goods. Europe with labor much cheaper and more plentiful than ours is being driven from foreign markets by India and Japan on some lines of goods. Let the foreigners fight it out among themselves with cheap labor. Americans ought to be satisfied to maintain cotton and wages at an American level and sell to the foreigner what goods he will take made under American conditions. Foreign trade purchased by lowering American wages to the foreign level is not worth having.

10. It is not possible for cotton growers and manufacturers to maintain a minimum and a maximum price for cotton. Such a plan would involve its extension to cotton goods. Cotton and cotton goods are worth just what they will bring, no more and no less.

11. We believe they will.

12. American spinners have not affiliated with the foreign spinners to embarrass the American planter and have no intention of doing anything of the kind. It is not necessary to wait for "time to reveal the true status." The truth is easily determined now. Doubtless Mr. Landers' question is prompted by the visit of Americans to the Congress at Manchester last year and to the one at Bremen this year. There is no question that the chief object of the International Federation of Master Cotton Spinners and Manufacturers is to organize spinners for the

purpose of shutting down their mills when the price of cotton becomes so high as to make spinning and weaving unprofitable. There has been some disposition to deny this, but at the recent Washington Conference, Mr. Macalister, the English representative, frankly avowed it to be the purpose of the European spinners. There is no reason why that object should be concealed. It is perfectly proper, and in fact necessary to the solvency of the European industry. There are approximately 88,000,000 cotton spindles in Europe. Estimating the capital invested and the number employed in the proportions existing in the United States in 1900, we have the following result for the European cotton industry:

Spindles	88,000,000
Capital	$2,163,000,000
Operatives	1,400,000

Doubtless the actual capital is less and the number of operatives is more than this estimate, which however, serves our present purpose of giving Mr. Landers some idea of how much Europe has at stake in the cotton industry. In addition a large part of the population depends indirectly on cotton manufacturing for sole or partial support. The number of such dependents cannot be estimated, but it is estimated that ten million people in Great Britain, or one-quarter of the population, rely either directly or indirectly on textile manufacturing for support. This vast European cotton industry is in turn wholly dependent on foreign countries, chiefly the American cotton belt, for a supply of raw material. The deep significance of these conditions is so clear that he who runs may read. Social order in Europe, as elsewhere, depends on keeping the working people employed. The main reliance of the revolutionary party in the present contest with the Russian government is a general strike. Bad as it is to have the people refuse to work, it is infinitely worse to have them hungry and unable to find work. With so large a proportion of the working people of Europe engaged in manufacturing American cotton into cotton goods it is easily within the range of possibilities for a failure of the American cotton crop to precipitate a social revolution in Europe. This possibility is well recognized there, although as a matter of course it is not proclaimed from the house tops. Under such conditions what is more natural than for the European cotton manufacturers to combine for self-preservation when the price of cotton becomes so high as to threaten them with bankruptcy, and that such combinations should receive the support of the rulers of Europe?

The political and social consequences of a cotton famine in Europe explain the aid given by the government to plans for increasing the cotton supply. Substantial subsidies have been granted to colonial cotton growing companies, the importance of the subject has been emphasized in speeches from the British throne, and at the recent Bremen congress the German Emperor received the president, Mr. Macara, on board his yacht and there discussed the cotton problem. On one hand was the representative of the cotton industry; on the other the representative of organized government. Both were facing the same danger, a scarcity of cotton that threatens the business of each. And while the Kaiser and Mr. Macara were conferring the Southern cotton planter thousands of miles away was working to supply the cotton that should make the Kaiser's throne and Mr. Macara's business more secure.

The fear of an American cotton trust supplies European manufacturers with a powerful incentive to combine for mutual protection. This is illustrated by their attitude toward the plan to warehouse cotton throughout the cotton belt. They recognize it as the only effective means of preventing the waste that now results from country damage, but secretly fear that it contains the germ of a gigantic cotton trust that will hold the cotton manufacturing industry by the throat. It is difficult for a cotton planter to appreciate the perilous position of the European manufacturer because the planter's industry is not dependent on a supply of raw material. It may aid the planter, however, to appreciate the situation of the European spinner if he will think of his own dependence on the jute and tie industry, and on the present system of ginning cotton. Yet these combinations that the planter considers so

oppressive affect only minor details of his business. What the European manufacturer fears is a cotton trust equally powerful and exacting and controlling the supply of his raw material. Let the planter put himself in the European's place.

We are sure if Mr. Landers was a European cotton manufacturer he would do just what the European manufacturers are doing. It is simply self-protection. It would aid powerfully to bring about a better understanding between European spinners and American growers if the spinners would frankly state the object of their Federation (as Mr. Macalister did at Washington) and the growers should recognize such object as entirely justifiable.

The American spinners, however, are in an entirely different position from that of the spinners of Europe. Cotton growing and manufacturing in the United States are simply parts of one industry; both enjoy the advantages of the same political system and each profits by the prosperity of the other. The reasons why American cotton manufacturers cannot join and would not be benefited by joining the European spinners in their organization to meet high prices for cotton and low prices for goods by a curtailment of production were given at Atlantic City last September by the writer of this reply to Mr. Landers, and need not be repeated here. It may reassure Mr. Landers, however, to know that those reasons met with general approval in the American cotton trade. We have had good opportunities for observation and have not found one American manufacturer who favored the slightest affiliation with the spinners of Europe in their attempt to meet an unbalanced condition of prices for cotton and cotton goods with organized international short time.

As to the visits by Americans to the European cotton congresses they are in accordance with a desire to cultivate better relations with our foreign friends. Mr. Landers and his brother planters should dismiss the idea that in these visits there lurks any danger of a combination against the planter. Such combination is entirely outside the scope of the American associations sending these delegates, as will be seen from the following extracts from their charters:

The American Cotton Manufacturers' Association: "The objects for which this corporation has been formed are to extend and encourage investigation and experiment in scientific methods of cotton and textile manufacturing; to gather and promulgate information concerning cotton manufacturing and textile arts; to promote social intercourse among persons engaged in cotton manufacturing and kindred or allied pursuits; to establish and maintain libraries of work on textile or other arts; to broaden the knowledge of its members as to improved methods of manufacturing and as to the possibilities and development of all kinds of textile manufacturing; and to do generally all acts or things incidental or desirable in accomplishing these objects."

The New England Cotton Manufacturers' Association: "This association has been formed for the purpose of encouraging scientific investigation and experiment as to the methods of manufacturing cotton; collecting and imparting information relating to this industry; promoting social intercourse among its members; and establishing and maintaining a library of works on textiles in the city of Boston."

As for combining with European manufacturers against the planter, the American manufacturers' associations could not if they would, and would not if they could.

The visit by the writer last year to the Manchester Congress led to the Washington Conference of growers and manufacturers, and his report at Atlantic City, published widely in England, doubtless stimulated English cotton manufacturers to send the delegation that recently visited the South to investigate conditions in the cotton belt. They returned convinced of the vast possibilities of the Southern cotton fields in respect to increasing the world's supply. Thus to American spinners the credit belongs for having inaugurated the plan of bringing growers and manufacturers in conference, but the success of the plan now depends on the co-operation of both spinners and growers. A good beginning has been made, but the conferences and exchange of visits should be repeated regularly in the future. Not only should the spinners confer with the planters in the cotton fields, but the planters should visit the manufacturing districts and learn there how to co-operate with the spinner. This could best be done by sending a delegation of representative cotton planters to Lancashire, where half the cotton manufacturing trade of the world is concentrated

and where a large part of the American crop is used.

While such conferences will contribute materially toward bringing planters and manufacturers into harmony, too much can easily be expected of them. The grower and spinner will always struggle with each other as seller and buyer. The grower wants as much as he can get for his cotton; the spinner wants to buy it as cheap as he can. Each is right in his endeavor, and the price at which the sale is made depends in the end upon the supply of cotton and the demand for goods. This commercial antagonism must be recognized as everlasting. It exists between all buyers and sellers, between the spinner and weaver, as well as between the planter and spinner. Besides this the foreign spinners by reason of their peculiar position, have special interests which they only can protect and which it is right they should combine to protect as they have done in organizing the International Federation. Outside those natural lines of conflict there are many lines on which growers and manufacturers the world over have common interests. Among these may be mentioned:

1. Better baling and preparation for market.
2. Better care of cotton in transit.
3. Reduction of the number of middlemen to a minimum.
4. Remedying the evils of speculation.
5. Maintaining uniform standards of weight and measure.

In order to accomplish results planters and manufacturers should confine their conferences to these and other lines on which they have interests in common. Not only should there be no attempt to repeal the laws of supply and demand by trying to fix maximum and minimum prices, but American planters and spinners should avoid any appearance of conferring with foreign spinners on such matters as international short time, which is purely a foreign question. For this the International Federation was organized and it is for this reason that we believe no good can result from further visits of American delegates to the secret sessions of foreign cotton congresses. We can recognize their special interests, but our presence at secret sessions at which such interests are discussed necessarily bears the appearance of intrusion. It can do no good and will do much harm by creating mutual distrust among growers and spinners. To do any good, conferences of growers and spinners must be wide open, as was the one at Washington, in order that the millions who cannot visit them in person may know what was said and done and thus be fully advised. The cotton trade of the world cannot be regulated in secret session.

OFFICIAL INSPECTION OF SILK.

The Japanese government has recently established an inspection bureau at Fukushima to examine and certify to the quality of Japanese silk goods. Heretofore there has been more or less trouble over the deliveries because of difference of opinion between buyer and seller regarding the grade and condition of the goods. In the absence of an official inspection the settlement of these disputes had to be made by the individuals concerned in each case, necessitating long drawn out controversies, occasional resort to the courts, and injury to the silk trade. To remedy this state of affairs the government took the matter in hand and on July 10, 1905, established a bureau for inspecting every piece of habutai silk made in the prefecture of Fukushima. The following circular has been issued explaining the system of inspection:

Fukushima Prefecture in Japan is noted for the manufacture of silk of light weight, which is generally known under the name of "Kawamata Habutaye." The principal feature of the silk is the superiority of the raw materials used in its manufacture and its suitability for dyeing and printing.

Kawamata habutaye has been favorably known for many years past, and the demands for these goods from all parts of the world have been steadily increasing year by year. Up to the present, however, there has been neither public nor private establishment for inspection of silk to certify its grade; this has caused a considerable inconvenience to both dealers and manufacturers. These facts have been brought to the notice of the Central Government, and at last the Fukushima Kencho (Prefectural Government) has decided to establish an Official Habutaye Inspection Bureau to remove such inconveniences, and also to improve the quality of Kawamata habutaye by means of inspecting all pieces of silk made in that prefecture. The bureau having been organized and come into

operation on the 10th of July, will inspect every piece of habutaye manufactured in the prefecture of Fukushima, classify the same according to its quality, and also examine the standard weight which silk refiners have stamped on pieces. The classification of qualities will be in three grades—namely, first, second and third, and each piece of habutaye shall bear an inspection certificate, as shown below, and also bear an inspection number, as per the specimen shown below:

Every piece of Kawamata habutaye will bear a mark of the standard weight, which is to be stamped by the silk refiners at the end of every piece, according to an official adjustment table of the standard weights.

In case of any question arising with the same as to its weaver, refiner, etc., it will be easily traced by application to the bureau, where all these particulars shall be kept on file for such purposes.—The Prefectural Government of Fukushima, Japan.

kept at least a year after the last entry in it has been made. The firms engaged in the export of habutai are required to submit their books and stock to the inspection of officers authorized for that duty. Whoever disregards any of these regulations or makes false entries in his books will be punished by a fine of at least 25 yen ($12.75). The proprietor of an establishment will be held responsible for the acts of his agents or employes.

This action by Japan in taking control of the inspection of habutai with the object of preventing the delivery of inferior goods and thus not only maintaining but increasing the reputation of an important Japanese product is especially noteworthy at this time. Such a

1st GRADE.

Red Kiku.

2nd GRADE.

Golden Kiku.

3rd GRADE.

White Kiku.

Reproduction of Official Inspection Label, Reduced Size.

When the habutai inspection service was established a year ago the following official order was issued in regard to it:

The weight of habutai intended for export must not be increased by dampening. In the manufacture of habutai none of the following articles can be used: Magnesium, salt, sugar; the Minister of Commerce and Industry is authorized to extend this list of prohibited materials. Goods manufactured contrary to these regulations cannot be sold, transferred or exported. The manufacturer must attach to every piece a label bearing the name of the manufacturer, where and when made, giving the year, month and day; also the number of the piece. Each manufacturer is required to keep a record of every piece delivered, giving the year, month and day of delivery, number of piece, and weight of the unfinished habutai; and the year, month and day when finished; the weight of the habutai after the process of finishing, and the weight of the goods when offered for sale. Each book must be

system of official inspection of silk goods may at first thought appear to be an unusual extension of governmental interference in the regulation of commerce and industry. There are many cases, however, in which the United States government goes as far if not farther. It is but recently that a system of meat inspection was established in this country by which meat prepared for interstate commerce and export is to be inspected and stamped with a certificate of good condition, just as the Kawamata habutai is inspected and stamped in Japan.

The most valuable lesson to be learned by Americans from the system of inspecting habutai in Japan is the manner in which it was established. There was no outcry raised to startle the world and shake the confidence

of the silk trade in the quality of Japanese habutai. To use the words of the official circular, "the facts were brought to the notice of the Central Government" and that government proceeded quietly to establish an efficient system of inspection for every piece of habutai made in Japan. This was done so quietly that it was necessary to issue a circular one year after the inspection bureau was organized, in order that the silk trade in general might know of it. In the meantime there was no disturbance of trade, no impairment of the reputation of habutai. Everything was so managed that trade was increased and the reputation of Japanese habutai enhanced.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

It is only with the last few days that buyers' interest has been centered to any extent, although a number of lines of low grades have been opened for over a month or six weeks. Hence up to the present business has dragged slowly along, with a number here and there taken up and developed as a leader.

Thus far the strength appears in spots only, but with the advent of buyers in the market (which is now decidedly more in evidence) the general lines will receive greater attention.

The apathetic attitude maintained by buyers is complained of in some quarters, and the small volume of orders booked thus far does not compare favorably with this time a year ago, but this is no indication of weakness, for there is every reason to believe that on worsteds more particularly, the volume of business this season will exceed all previous records. This prediction is based not on the market situation, but on the prosperous conditions which now exist throughout the whole country, and which reflects itself very quickly in its purchasing power.

Worsteds will naturally predominate in the demand for the reason that consumers for the time being favor that class of fabric, but it is probable that a reaction will take place among the higher class goods, and it is said that mills that show high class wool novelties are much encouraged.

The orders booked for staple serges are normal and satisfactory.

Several of the large mills are practically sold up on goods below $1.00 and comfortably situated on numbers up to $1.25.

There is a divergence of opinion concerning the support that the low grade mercerized worsteds are receiving. Many of the lines shown in this fabric are attractive in pattern and finish, and despite all criticisms of their wearing qualities, will undoubtedly prove good sellers, as there is no other fabric to take their place that can be made up in a suit to sell at $10.00 or less. Most of the lines already opened show an advance of 5 to 10 per cent., and this undoubtedly is one of the causes which has resulted in buyers withholding their orders.

The lines which the American Woolen Co have recently shown, comprise 12 to 18 ounce AA clays, ranging in price from $1.35 to $1.80; AA 12 to 19 ounce unfinished worsteds, ranging from $1.45 to $2.02 1/2; 10 and 12 ounce cheviots at 80 and 85 cents. French backs from $1.52 1/2 to $1.70; unfinished serge 10 to 13 ounce from $1.10 to $1.32 1/2; 11 to 19 ounce unfinished worsteds $1.07 1/2 to $1.92 1/2.

Washington Mills suiting $1.00 to $1.90; unfinished suitings $1.06 to $1.50; plain twill mixtures $1.10 to $1.60.

H. J. Libby & Co. show lines of 14 ounce herringbone and diagonal overcoatings at $1.15; 12 ounce Indian Spring fancy cassimeres at 87 1/2 cents; 12 ounce Eastern Star at $1.05; Kennebec fancy cassimere at $1.00; Highland fancy cassimere at 75 cents. Fair Brook fancy cassimere at 72 1/2 cents and Oxford herringbone suitings at 75 cents.

The Blackinton Manufacturing Co. show a line of woolens as follows: 10 1/2 ounce at $1.37 1/2; 12 1/2 ounce at $1.65; wool and silk at $1.75 and $1.80.

James P. Kelly, selling agent for the

Racine Woolen Mills, has opened a line of 10 ounce tropical cassimeres, standard weight thibets, venetians, velours and vicunas at prices ranging from $1.00 to $1.75.

It is stated by the Coronet Worsted Co. that they are completely sold up on all their lines of serges, also on both the mercerized and manipulated worsted made by the Coronet and Plainfield Mills.

Walter Hoffman reports that the piece dyes from the Steel Mills are meeting with very favorable reception by the trade; the same house is showing a line of all worsted suitings at $1.35 to $1.65; 60 inch worsted trouserings at $1.50 and light grey worsted mixtures from the F. L. Sayles Mills at $1.27 1/2.

The Cleveland mercerized worsteds are shown by Morton H. Meinhard, price ranging from $1.00 to $1.65.

The Nanquit Mills' all worsted tropicals are shown by Austin T. Levy at $1.20 net.

The Shelbourne Mills' mercerized worsteds range in price from 92 1/2 cents to $1.32 1/2: the all wool goods from the Carolina and Ashaway Mills range in price from $1.05 to $1.25.

The lines of fancy worsted made by the Gilbert Manufacturing Co. are shown by George O. Leavett at an advance of 7 1/2 cents over last spring season.

The Jamestown Worsted Mills show lines of mercerized worsteds at 80 cents to 97 1/2 cents; fancy piece dyes from 95 cents to $1.25 and all worsted at $1.32 1/2. Wendell Fay & Co. have opened lines of Middlesex all wool fancy worsteds with silk mixtures at $2.10 and $2.25.

Swift River cassimeres at $1.42 1/2 to $1.60 and Wellington fancy serges at $1.45.

DRESS GOODS.

The business for spring delivery has not made much headway, although the outlook is in every way promising, and both the jobbers and the cutters seem to be well pleased with the various domestic lines opened thus far.

The trend of the demand is in the direction of soft clinging materials, such as chiffon batistes, wool taffetas, silk and wool poplins and henriettas, French serges and prunellas.

Sheer goods will prevail in all materials.

The collection of fancies comprise new designs in soft London smoke greys, black and white checks, narrow stripes and ombre overchecks in an endless variety of color combination, of greens, dark reds and greys. There are several collections of fancy mohairs shown, but fancy mohair for women's wear has fallen into disfavor, with the result that the demand is of small proportion.

At Fig. 1 is a sample of 36 inch worsted fabric made by the Naushon Co., Valley Falls, Rhode Island, at 30 cents, 2 per cent.

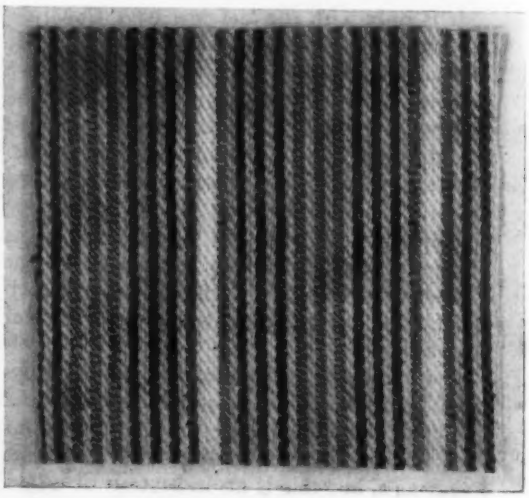


FIG. 1.

10 days April 1st—delivery December 1st to 15th.

This fabric is shown in a wide variety of designs such as checks, overchecks and neat hairline stripes in black and white.

Owing to the wage advance that this company recently made to their operatives, it is said that the price of the cloth will in future be 32 1/2.

SILKS.

With the exception of a few spots the conditions prevailing are very unsatisfactory. The causes for these stagnant conditions are manifold, and are primarily due to the changes of fashion.

The manufacturers of high grade goods in the market attribute the lack of interest on the part of women to the fact that they have

been so often disappointed with the wearing qualities of silk garments.

It is a well known fact among the trade that silk fabrics have been adulterated and loaded in such a manner; in order to satisfy buyers for goods to sell at a price, that in many instances such silks possess little intrinsic merit; and this is given as the reason for the reaction against the fabric in general. This adulteration has been introduced by new and often irresponsible manufacturers, many of whom have been unable to meet the strain, and have succumbed to the depression which has prevailed for the last six or eight months.

The present outlook is more encouraging; although low grade fancies, and some standard accumulation, may be secured at a very low figure. A marked improvement over previous months is noticeable.

Black broad silks are proving good sellers, and high grade colored taffetas are in continued demand.

High class fancies, such as plaids, in an endless variety and combinations, are freely taken for waist purposes.

M. C. Migel & Co. are said to have brought out four hundred new plaids for the coming fall season.

Stripes are also likely to be revived later on, and some new designs are now being shown. At Fig. 2 is shown the old time Roman stripes, brought out by L. and E. Stern, 21 inches wide at 70 cents. M. and C. Migel have brought out a range consisting of white ground with black stripe, black with white, gray and black, new navy with black, wine with black, Alice with black, and smoke with reseda, wine, and white, 20 inches at 70 cents.

COTTON DRESS GOODS.

This division of the market has developed unusual strength, and both the imported as well as domestic lines of zephyr ginghams and white goods have been taken so freely that a shortage is spoken of as being most probable if the orders continue to come in as they have during the last month. It is said that the mills which make staple dress ginghams, such as A. F. C., Red Seal, Everett Classics, and fabrics of that order are already sold up, and therefore cannot accept any more business to be delivered before April or May, 1907.

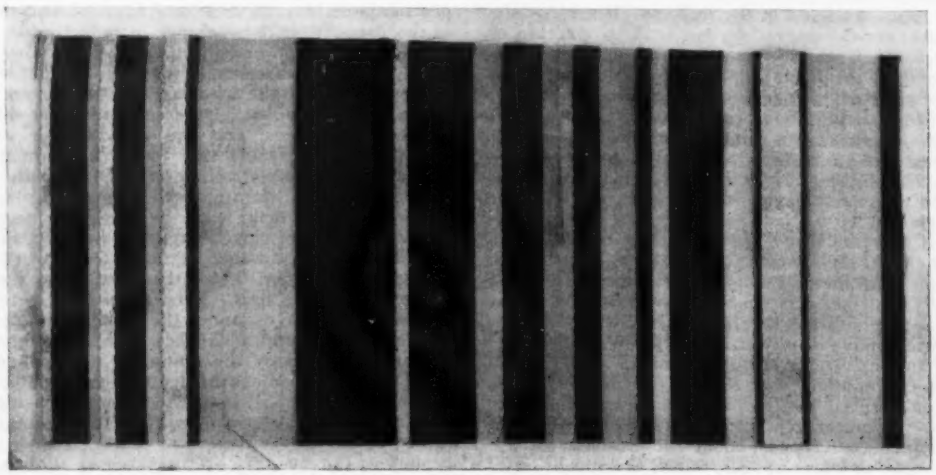


FIG. 2.

There is every indication that colored wash fabrics will displace white goods in a measure, but white is always the leading color for summer, and most probably will always remain so; among the collections of colored wash goods shown, the new shades are of the soft pastel order with stripes and jacquard figures.

The English Standard for Spinners' Wages.

Last month we gave an account of the Lancashire system of calculating piece work prices by a system of allowances for variations from standard conditions. We also gave the standard and a list of the allowances for weaving in English mills. This month we will give our readers some details regarding the Lancashire lists for spinning, of which there are several. Prof. Chapman, of Manchester, in tracing the development of spinning lists in Manchester, says:

"It would be tedious to trace in detail the steps of development in spinning lists; suffice it to say that most incidents in the mill, which are not dependent on the operative, but tend to increase or decrease his work or his output, are now taken into account in the lists. A survival of the fittest has taken place among the various elements, as witness for instance the widespread adoption of payment by the length of yarn spun instead of by the pound. It used to be a common complaint that men were defrauded by spinning being made finer than it was stated to be, but payment by length, which can be determined by an instrument known as the indicator, prevents this. The operatives have been so insistent on the use of the indicator that refusal to comply with their demands led on one occasion to a costly strike. As among the elements of the lists, so among the lists themselves, the most appropriate have survived. For spinning those of Oldham and Bolton are the favorites now.

"It is commonly said that as the Oldham list is the only 'speed list' it alone encourages improvements in machinery. But the division of gains from increased speeds under the Oldham list applies only to quick speeds, which technically refer solely to movements faster than three draws in fifty seconds, speeds that are possible only on Oldham counts, and where these counts are produced the Oldham list is almost always used. Apart from the arrangement for quick speeds, however, one very important difference exists between the Oldham list and other lists. The former takes as its basis a definite wage, the others a definite price per hank. Here are two lines each from the Oldham and Bolton lists to illustrate the difference:

FROM THE OLDHAM LIST.

Number of doz. Spindles.	Total earnings. £ s. d.	Percentage Spinners.	Percentage Piecers.
115	3 15 2	51.45	48.55
116	3 15 4	51.55	48.45

FROM THE BOLTON LIST.

Number of spindles on each mule.	96s Count per 100 lbs. d.	98s Count per 100 lbs.
888	198.81	205.01
900	187.56	203.74

(The prices for two counts only are given in this extract.)

"At Oldham the powers of the machinery in each mill are tested and piece rates are then settled which will provide the wage given in the list for mules bearing the number of spindles on the machinery in question. Hence it would be thought that all gains from improved machinery, or better cultivated or prepared cotton, must accrue to the masters at Oldham, but to the men elsewhere. As a matter of fact, however, a minimum wage is assumed as a basis everywhere. The operative spinners' amalgamation has declared that it must be understood that the men are not to suffer if machinery is antiquated or cotton is bad, and the actual weekly wage is taken to indicate whether materials are, or are not, up to the standard. Moreover Clause 6 in the Bolton list of 1887 declares that 'the standard speed shall be taken in each mill as the speed usually run at such mill. In case of alteration to a speed below such standard the price per 100 pounds to be increased equal to two-thirds of the proportionate difference in reduction in size of the rim.' When new machinery is laid down, or when alterations are made, the men are put upon time wages until the machinery settles down and its powers are known. Different mills have different normal speeds, and the weekly task wage, therefore, on the same sort of work is not quite the same in all cases. Under the Oldham list, on the other hand, if the union officials are vigilant, a uniform weekly task wage on the same sort of work can be more closely secured—not necessarily a uniform weekly wage, because some work involves more ability than other work and this is recognized in the lists. The differences between task-wages, however, under the piece rate lists are not really considerable. If they become so the employer is pressed by the union on the ground of "bad work" or bad machinery (for the amalgamation has declared that men on inefficient machinery ought to be paid above price list), and he may be forced to buy better cotton, so that his speeds may be put up, or, to pay, or to increase, allowances. Nevertheless the Oldham system is obviously the more satisfactory because it is the more automatic and so offers fewer grounds for dispute. Hence a list of minimum wages was drawn up which might be used in Bolton as a basis when the indicator was adopted. Although under the Oldham list masters tend to receive at first all the advantages resulting from improved machinery or better cotton, it does not follow that they retain them, for the men may condemn increased speeds as adding to their work and secure allowances, or they may move for an increase in standard rates."

From this account it appears that under the Bolton system the spinner is paid by the pound, the list being adjusted for the different counts and sizes of the mules. The weekly wage is then calculated at the prescribed rate from the number of pounds of yarn spun. The more work done the larger the amount earned by the spinner. By this system the spinner receives the whole of any increase in

the effective speed of the machine as the piece prices remain unchanged.

The Oldham list, on the other hand, is based on a different principle and is called a "speed list" because it provides for a division between the employer and the spinner of the gain resulting from the increased speed. By the Oldham system a weekly wage for mules of different sizes is first fixed upon. The piece work price is then found by dividing this assumed weekly wage by the number of thousand hanks that any given machine will produce in 56 1/2 hours after making certain allowances for doffing and other stoppages. If the mules run faster than three 63-inch draws in 50 seconds certain additions are made to the spinners' weekly wage for each second gained in making three draws. These speed allowances amount to only one-half the advantage that results from the increased speed. The result is that the amount paid to the spinner is less per pound at the higher speeds. It is this system of speed allowances that constitutes the peculiar feature of the Oldham list. In addition to this there are many other allowances made for varying conditions of work and machinery. Following is a statement of these allowances agreed upon by the English employers and operatives:

In cases where spinning mules are running quicker than 3 draws in 50 secends, with 63 in. draw for any counts of yarn, twist, or weft, one-half the advantage of the difference arising from quicker speeds shall be added to total earnings, as in following list.

Number of doz.	Amount to be added for each second quicker than 3 in 50. d.	Number of doz.	Amount to be added for each second quicker than 3 in 50. d.	Number of doz.	Amount to be added for each second quicker than 3 in 50. d.
36	4¼	64	6¼	92	7½
40	4½	68	6½	96	7¾
44	4¾	72	6¾	100	8¼
48	5	76	7	104	8¾
52	5¼	80	7¼	108	8¾
56	5½	84	7¼	112	9
60	6	88	7½	116	9

Other lengths of draw in proportion.

Clause No. 1.—The mode of calculating length of yarn spun by spinning mules to be as follows:—

From 56 1/2 hours shall be deducted.

1.—An allowance of 1 1/2 hours per week for cleaning and accidental stoppages.

2.—An allowance for doffing time as follows:—

For each pair of mules, of 60 dozen spindles and under, 5 minutes.

For each pair of mules, over 60 dozen spindles and less than 90 dozen, 6 minutes.

For each pair of mules, of 90 dozen and upwards, 7 minutes.

Number of doffings reckoned off one mule only.

3.—An allowance of 2 1/2 per cent. for breakage.

Clause No. 2.—Mule indicators to be so constructed as to allow 2 1/2 per cent. for breakage.

Clause No. 3.—The above list of total earnings does not apply to firms using a low quality of cotton and waste, requiring more piecers; or to firms using a superior quality of cotton, requiring fewer piecers; in such cases, if any dispute arise, arrangements must be made with the consent of the two Committees.

Clause No. 4.—In case of a dispute arising on account of quick speed, or from bad work, the question shall be referred to the two Secretaries, and in the event of them not being able to settle the same, the dispute shall be referred to the two Committees for a decision.

Clause No. 5.—If spinning 24s and under, 1s. to be added to the list of total earnings; but in cases of mules running 3 draws in 50 seconds, or slower, 1s. to be added for counts from 24s to 21s inclusive, and 2s. for 20s and all counts below.

Clause No. 6.—The above list of total earnings does not apply to double decked mules, odd mules, three mules, or hand mules. In all cases of dispute, arrangements are to be made by the two Committees.

CONDITIONS FOR EXTRA WORK.

Roving Carrying. 1.—If no bobbin carrier is employed, 1 1/2d. per 100 lbs. of yarn weighed in to be added to the list, but if a hoist is in use and no bobbin carrier, 1d. per 100 lbs. to be allowed.

Double-decked Mules. 2.—If spinner is employed on double-decked mules, 1s. 6d. per week to be added to total earnings.

Double Rovings. 3.—If spinner is spinning from double rovings, 1s. per week to be added to the list. This is to apply where the mules are adapted with tin guiders for double rovings, though not always working double rovings.

Breaking-out Rovings, Etc., or Turning Strings. 4.—For mules up to 36 doz. inclusive, 1s. per pair of mules to be allowed. For mules upwards of 36 doz., 1/2d. per doz. per pair to be added. For Breaking-out Double Rovings, double the above rates to be paid.

Note.—The allowances for breaking-out or turnings strings are considered fair payment to the spinner for loss of time entailed by those operations.

Arrangement for Tubing. 5.—Tubing to left for individual arrangement, and any dispute respecting payment for same to be decided by the two Committees, the allowance made to be fair payment to the spinner for loss of time entailed by the operation.

Extra Piecing for Coarse Counts. 6.—If spinning 21s weft counts, and under, that an extra full-time piecer be allowed, and paid by the employer, the wages to be in accordance with the size of mules, and what is actually required in each case.

Changing of Rims. 7.—When rims are changed, there shall be no alteration made in the piece-work price for less rims than a 17-inch for two grooved rims, and 15-inch for three grooved rims; but for

all larger rims, the price to be altered as per agreement between the Secretaries of the two associations. This arrangement only to apply for all changes made after this date, Sept. 15, 1894.

Payment for Roller Motions. 8.—Where roller motions are employed, the minder is to be paid for yarn produced by the same, whether the mules run quicker or slower than 3 draws in 50 seconds, according to the scale printed in this list at so much per second.

Thus:—given, a pair of mules 64-inch stretch, allowing 4 inches roller motion, and running 3 draws in 55 seconds, add the roller motion to nominal stretch, making in this case 68 inches. Then if 68 inches gives 3 in 55 seconds, 64 inches gives 3 in 52 seconds (nearly). Deduct one from the other, and allow the proper amount for the 3 seconds as per scale.

Working up Pieces. 9.—Any spinner who is required to work up pieces of rovings broken out by other spinners, is entitled to compensation for such extra work, and in case of disagreement between the employer and operatives, the allowance shall be fixed by the secretaries of the two associations, in accordance with the circumstances of each particular case.

Doffing Cops on the Floor. 10.—Any spinner who is required to doff his cops, and put them on the floor, on account of being short of doffing skips, and then having to pick them up again, and put them into skips, shall be entitled to compensation for such extra labor, and such compensation shall be agreed upon by the Secretaries of the two Associations, as the circumstances of each case may require.

Squaring-up of Mules. 11.—For re-setting or leveling up mules, spinner to be paid at the following rate, if he is required and in attendance:—

For mules up to 56 doz. inclusive, 5d. per hour.

For mules from 57 to 76 doz. inclusive, 5 1/2d. per hour.

All larger mules, 6d. per hour.

Piecers, if required and in attendance, to be paid their usual wages by the employer, as an equivalent for the yarn spun on one mule while the other is being re-set.

12.—Where bad work is proved, the employers agree that it shall be an admitted principle that the men shall be entitled to compensation for loss in wages until the grievance is removed.

Should there be no loss in wages, but the work is proved to be bad, then the firm involved shall make such alterations in the speed or material as may in the opinion of the investigators be required to meet the case.

Any loss in wages resulting from such temporary reduction in speed shall be covered to such an extent as the two associations shall decide. This clause shall not apply to any district in which the minimum or maximum speed clause is in operation.

13.—A month's notice of any desired alteration in the official list and conditions shall be given on either side, and all cases of dispute shall be attended to as per the terms of the Brooklands Agreement, and if on investigation the employer be found to have caused the dispute, he shall be held responsible for the same, and vice versa the spinner.

For the information of members, we publish the foregoing list of total earnings, together with a scale of wages for spinners and piecers, as set forth in the percentage of the total earnings, and all members are herby urgently requested not to pay more than the before named scale of wages for piecing. If they do so on their own account, they will be held responsible for the same, and have to pay the difference out of their own wages; likewise neither will an employer, manager, mule overlooker, nor any other person acting under their authority, be justified in interfering with a spinner, so far as causing him (by instruction) to pay above the scale of wages for piecing; if they do so, the employer will be held responsible, and have to pay the same.

Note.—The extra allowances named for spinning pin cops, coarse counts, quick speeds, bobbin carrying, double rovings, turning strings, breaking-out rovings, spinning with roller motions, and spinning upon double-decked mules, are, in every case, intended solely for the spinner, therefore no portion of the same, in any case whatsoever, must be given to the piecers.

In all cases where the members are not being paid in accordance with the list and its conditions, or are laboring under grievances which they desire should be removed, they are strongly requested to make application (without delay) to their Local Committee, who will cause action to be taken so as to bring about an investigation, such as is required by the rules of the Association.

A study of this list and system of allowances will doubtless be of great aid to those who may have occasion to investigate the problem of adjusting a standard list to American mills. The difference between the conditions in England and America necessitates changes in the English system, but the principles on which all standard lists should be based are the same everywhere, a fair wage and fair allowances to both employer and employe for changes from the standard.

MEETING OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

This association, successor to the New England Cotton Manufacturers' Association, will hold its eighty-first meeting at Hotel Champlain on the lake of that name on September 12 and 13.

An interesting list of papers is expected, and the beauty of the scenery around this hotel promises to make the meeting an attractive one to the visiting members and their guests.

Arrangements have been made for special trains of parlor cars, one leaving Boston at 9.30 a. m. September 11, and one leaving New York at 1.09 p. m. on the same day.

ALLEGED COTTON TREE DISCOVERY IN INDIA.

Editor Textile World Record:

A "discovery" is reported from India of an indigenous cotton tree, found in the Madras and Bombay presidencies, the product of which, up to the present time, has been used only for lamp wicks in the Hindoo temples, and for stuffing beds and pillows. Samples of the lint sent to Liverpool are said to have stapled 1 1/4 inches and to have been classed as superfine, and valued at 14 to 16 cents per pound.

It is reported that the trees are to be cultivated on a very large scale, and figures of yield are estimated at 400 to 800 pounds of lint for the first year. The promoter says that the second year crop will double the first and the third will double the second and that thereafter five to ten pounds of lint per tree annually for twenty years may be expected. The discoverer claims to have had five years' experience in cotton growing in Egypt, and he proposes to revolutionize the cotton industry with the new product.

This is probably the well known Gossypium arboreum, which is indigenous to the regions of India bordering the Indian Ocean. The fiber is fine and silky, and measures over an inch in length. The life of the plant is about five or six years, and the trees flower during the greater portion of the year. It is known in the vernacular as Nurma or Deo cotton, and it has found an exceedingly limited use by the priesthood and in the native domestic economy.

Regarding the alleged "discovery," it should be remembered that for forty years or more the Indian government has been interested in bringing to notice the fibers of the country, and the Dictionary of the Economic Products of India, published officially, contains descriptions of over three hundred species of native fiber plants, only a few of which are of commercial importance. It is most unlikely that any species of cotton, of real economic value, has been overlooked. In past statements made by the Indian authorities regarding Gossypium arboreum, it is claimed that its economic value has been very much overrated.

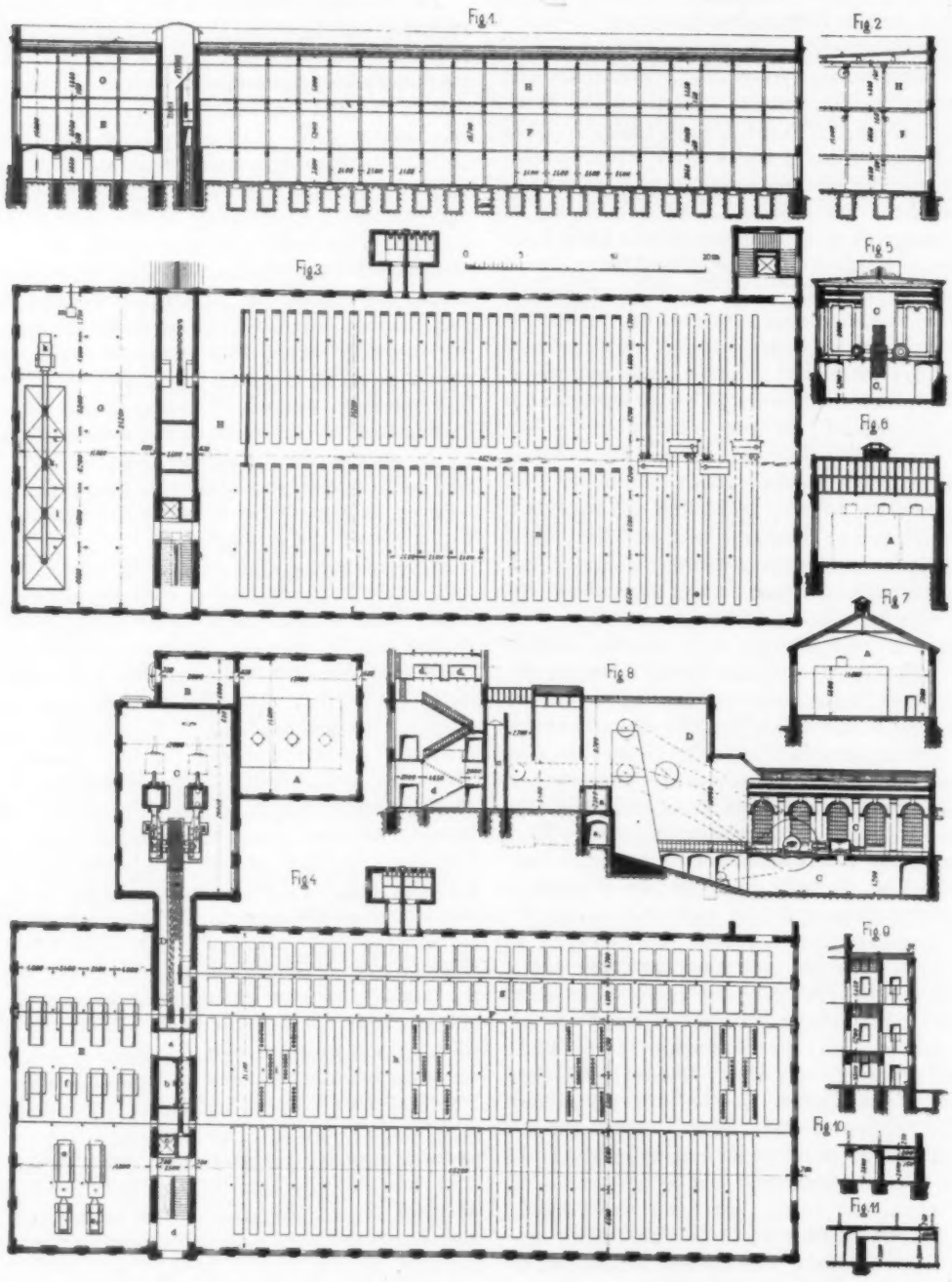
A COTTON SPINNING MILL.

The accompanying plan is for the cotton spinning mill built by Josef Barton, Nachod, Austria. The mill has 24,112 spindles, the machinery being arranged to admit the progress of the material from each process to the succeeding one with the least possible amount of handling. The building is three stories high, the first being utilized for reeling, storage and handling of the waste, the dust chamber and storage of yarn. An enclosed beltway divides the mill into two parts; the section at the left serves for the preparatory processes and contains the mixing room, g, in the third story, the picking room, e, in the second story, and the dust chamber with arched ceiling on the first floor. In this dust chamber the heavy material falls to the floor while the lighter material is carried by a ventilator to the dust tower in the beltway, whence it is carried to the open air. Fig. 1 shows the arrangement.

The yarn storage room is in the rear of the mill, a track connecting it with the outside. This room is also used for steaming yarn, reeling and for storage of cases. The part of the mill at the right of the beltway is the spinning mill proper. The first floor is used for storage, the second floor, F, for carding and drawing, the third floor, H, for spinning. The raw material is raised by the windlass, m, to the mixing room on the third floor and layered in piles before the bale breaker, k, Fig. 3. It is then carried by a lattice apron, l, to the bins, k'. The bale breaker is on the same floor as the mixer. The cotton is then transferred by aprons and distributed through the mixing room as desired. From the mixing room the cotton goes through the suction pipe to the room, E, below. It is then passed through two openers, e', which serve as a feeder for the vertical opener, e. The first opener opens and cleans the cotton, which after passing through the vertical opener, goes to the beaters, f, which deliver it in the form of a lap. This wing of the mill devoted to cleaning the cotton is fireproof and separated from the spinning room by a beltway.

The laps from the beaters are carried to the card room through the passageway, a.

There are 64 cards, g, set in two rows, each machine occupying 9 feet 10 inches in length and 4 feet 3 inches in width, the working width being 37 inches, and the cylinder 50 inches in diameter. In the centre of the drawing room are three draw frames, each with three heads and seven deliveries, set between three coarse flyers. There are eight



coarse flyers, h, each with 94 spindles of 8-inch gauge, or 756 spindles in all. Opposite the coarse flyers are 14 intermediate frames, each with 116 spindles, making 1,624 intermediate spindles in all. This enables the work to be done with very little handling of the cans. The remainder of the room is occupied with fine frames, aggregating 4,964 spindles.

The roving is carried on trucks to the elevator, shown at Fig. 8, by which it is taken to the spinning room, H, Fig. 3. This room contains 50 ring frames of 400 spindles each, 2 5/8-inch gauge; the bobbins are 5 inches long and 1 5/8 inches in diameter, and are used to spin the warp yarn; four mules, 1,028 spindles each, 1 1/8-inch gauge are used for spinning filling. This makes a total of 24,112 spindles.

There is a commodious stairway in the beltway, giving access between the second and third floors, the elevator, c, and the storeroom. Back of this are the dust towers, b, and a second passageway, a. Next comes the beltway, D, which extends to the power house, C. The other end of the beltway is reduced to one-half the width. The power house contains one compound steam engine so arranged as to enable the capacity to be increased by the addition of two more cylinders when required, making a four-cylinder engine. With two cylinders 750 h. p. is developed. The fly wheel is 18 feet in diameter and has 21 rims in which 2-inch ropes run. Three of the ropes drive the lighting plant in the basement; three are used for the cards, and nine for the machinery in the room, E, the draw frames, coarse and intermediate frames. The openers and fine frames are driven by three ropes running in the narrow part of the beltway. Six ropes run from the fly wheel to the third floor and drive the mixing machinery and spinning frames. The ring frames are driven by quarter turn belts, which are carried over guide pulleys as shown on the first ring frame in Fig. 3. The mules are driven from a counter shaft in the usual way; the distribution of the power is shown by the sectional view, Fig. 8, the counter shafts resting on masonry.

By reason of the compact arrangement of the power ropes there is considerable space available in the beltway for other purposes. The passageway, a, is the result of this economical arrangement; under it is a stairway leading to the basement. In the third story of the tower, d, are two water reservoirs, d' and d^2, from which the sprinkler system is supplied. A second tower with stairways is located in the rear at the right of the main building. In the centre is the elevator. The closets are in the centre at the rear, the plan being shown at Fig. 9. The mill is well ventilated throughout so that the operatives work in a good atmosphere.

Next to the power house is the boiler house, A, and a small repair shop. The boiler house contains three water tube boilers with superheaters, each with 3,200 square feet of heating surface. A sectional plan of the boiler house is shown at Fig. 7. The boiler house, Fig. 5, is finished in an attractive style and covered with a monitor roof; it is also lighted from the side. The mill is fireproof throughout, the floors being of cement construction. Fig. 2 shows the roof and floors. The mill contains 39,000 square feet of floor space, or 1.6 square feet per spinning spindle. Figs. 10 and 11 show the connection with the dust canal.—Uhland's Technische Rundschau.

The average net weight of cotton bales for different countries is as follows: American, 491 pounds; Brazilian, 235 pounds; Egyptian, 727 pounds; Smyrna, 400 pounds; Peruvian, 245 pounds; East Indian, 400 pounds.

It is said that the total production of the hand looms of India is about twice that of the power looms, and according to the census of 1901 about six million people are dependent upon the hand loom industry for a living.

Hemp is the leading article of export from the islands of the Philippine archipelago, being nearly ten times greater than that of copra, its nearest competitor. Of the receiving countries the United States is far in the lead with England second.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

THE IMPORTANCE OF SHADING TO WOOLEN FABRICS.

There was a time, years ago, when the difference in shade between two or more pieces of woolen fabrics was then of little importance to the buyer. Since then each piece was considered only by itself, it then going from the hands of the manufacturer into the hands of the retailer, or the tailor, and when each piece of cloth then was handled by itself in making up a garment. However, with the introduction of ready-made clothing and which consumes now the bulk of our woolen goods manufactured, and when certain parts of a garment are cut from one piece, and other parts of the same garments taken from other pieces, it will readily be seen how important it is for the manufacturer of the goods, the commission merchant, the ready made clothing merchant, as well as the wearer, that the pieces of fabric in a case, or a lot, ordered by one concern, are uniform in appearance, i. e., up in shade, the goods being ordered that way and sold with that understanding, since otherwise the garments thus made would be spoiled; for example, one sleeve of a coat might be of one shade, the other of another, and the other portions of said coat possibly presenting still two or more different shades, resulting in turn in garments which would come back on the clothing-house, or have to be sold as seconds.

Although a diversity of shade in connection with wool dyed goods, plain as well as fancies, may be due to the selection and mixture of the stock, also sometimes to its treatment in the various processes through which it passes into its manufacture into yarn and cloth, i. e., previously to the goods reaching the finishing room; still as a rule, the trouble may be frequently caused in the finishing process. In any case, the finisher is generally held responsible for the trouble, i. e., called upon to account for it, hence the responsibility is very largely upon his shoulders, and for which reason, we will look at the matter from this department of the mill, keeping in mind that any person who cannot be convinced that he is in the wrong, or his work not strictly correct, will not be likely to make any changes in his work to correct mistakes. He who stubbornly knows that wrong is not possible with him, simply will not make the best use of all his opportunities.

Certainly there will be many instances when shading or matching of a lot of goods in the finishing room is impossible, even with the best management of the finishing department of a woolen mill and when it then is necessary to subdivide the lot of goods under consideration into two or more sub-lots, according to differences of shades met with in the lot, marking the pieces of each off-shade with a different letter of reference. For example, the number of the style should be 34, then the first off-shade called 34^a, and if another is met with call it 34^b, etc., using then in turn samples from each sub-shade thus obtained when examining the next piece of the lot for its shade; doing this work certainly with the understanding that the less sub-shades made, the better all around, i. e., not over-do the matter. When goods thus graded are in turn sold and made up in garments, this method of numbering shades of one class of goods will be found of the greatest of advantage.

Now with reference to the finishing room, i. e., the finishing processes, there is any amount of a chance of starting off-shades. Beginning with the first process, the greatest care must be exercised in the fulling and scouring of the goods, for if this is not done judiciously, trouble as to differences in shade will be the result. Watch that the same kind and strength and body of a soap is used during the process of fulling and the same strength of a scouring liquor, if such is re-

quired for the washing process. Never guess ingredients to be mixed, or measure in a box, pail or basket, but use your scales provided to you for this purpose by the mill. In this way and by a thorough cooking, uniform results in the preparation of the fulling soap or scouring liquor may be reasonably expected, and so far as this matter has a bearing, good results must follow in the fulling and scouring.

(To be continued.)

OUR TEXTILE SCHOOL.

SKIP TWILLS PRODUCED BY COMBINING TWO UNEVEN SIDED TWILLS.

In Lessons 13 and 14, we explained the construction of the regular skip twills, i. e., such as produced from even sided twills, whereas for the present lesson we will take what we might call combination skip twills,

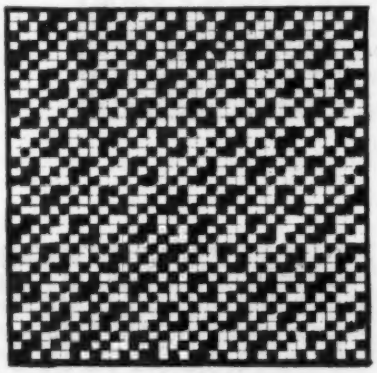


Fig. 1

or checker board skip twills, produced by combining two uneven sided twills after the skip-twill principle in a new weave. If drafting only a few threads of each of the foundation twills, as will be readily understood, the resultant weave will more closely come within the range of the skip twills or granite effects, whereas if we draft two or more repeats of each foundation twill, the resultant weave will more prominently produce a checker board effect.

In comparing this lesson, i. e., weaves produced with checker board twills, with checker board twills explained in lesson 20 we will notice that the weaves of this lesson carry the characteristic sharp cut off effect between each change of the weave, i. e., between changing from warp to filling effect both warp and filling ways, wherever such occurs, a feature not characteristic to the weaves explained in lesson 20, except in one or two instances, and where drafting one or two threads over the repeat of the weave

Having thus referred to the main differences of the new system of weaves compared to any previously explained, we will now illustrate and describe their construction in connection with the accompanying ten examples, of which,

Weave Fig. 1 has for its foundation the $'—_2$ and $_1—^2$ 3 harness uneven sided twill. Drafting three warp threads and three picks of each effect of this 3 harness twill after the plain motive setting, results in a new weave repeating on 18 warp threads x 18 picks. The effect produced is a well broken up affair, which also might be considered as a granite

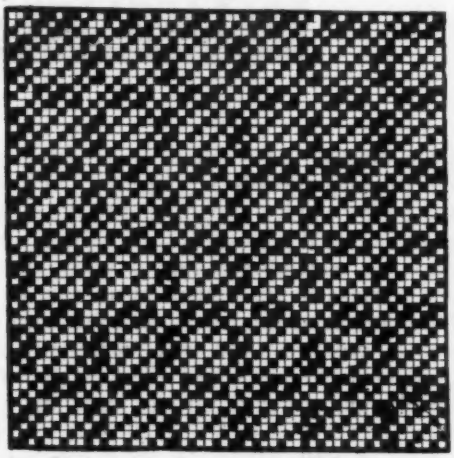


Fig. 3

with an indistinct twill effect, a neat and valuable weave for fancy cotton fabrics as well as worsted dress goods, also tropical worsted suitings, etc.

Weave Fig. 2 shows a more pronounced effect having again for its foundation the two 3 harness uneven sided twills, drafting however in this instance 6 warp threads and 6 picks of each foundation twill after the

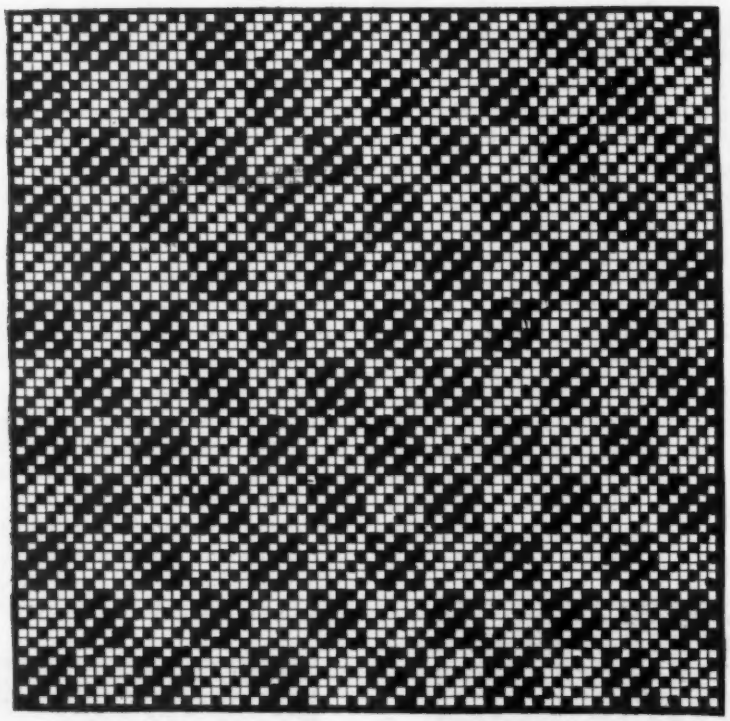


Fig. 2

plain motive, the resultant weave repeating on 36 warp threads x 36 picks. Although the design as given might lead to the idea of a pronounced checker board effect, yet it must be remembered that 6 warp threads and 6 picks in the actual fabric only cover little surface space, hence the effect that the weave produces will not represent that prominent checker board effect as shown in the design, although strictly speaking it is there, however in such a small scale that the weave is well applicable for fancy cotton dress goods, as well as worsted dress goods, suiting, etc.

Weave Fig. 3 has again for foundation the $^{1}\!-\!_{2}$ and $_{1}\!-\!^{2}$ 3 harness uneven sided twills, using 3 warp threads and 3 picks for each square of motive A, i. e., the $^{1}\!-\!_{2}$ 3x3 fancy basket. The new weave repeats on 27x27.

Weave Fig. 4 has the same foundation weaves as well as the same motive as the preceding weave, the only difference being

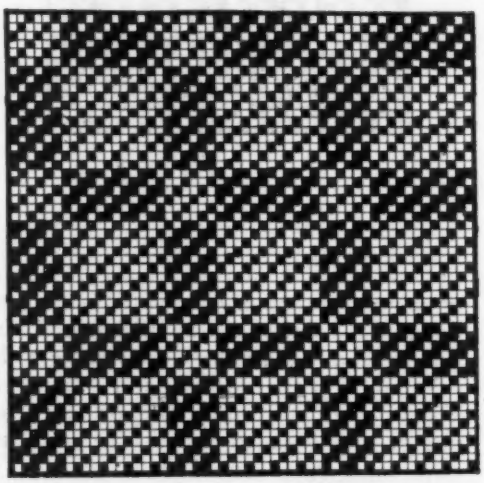


Fig. 4

that in this instance we drafted 6 warp threads and 6 picks of each effect, in place of the 3 warp threads and the 3 picks in the preceding example, the new resultant weave in this instance repeating on 54x54.

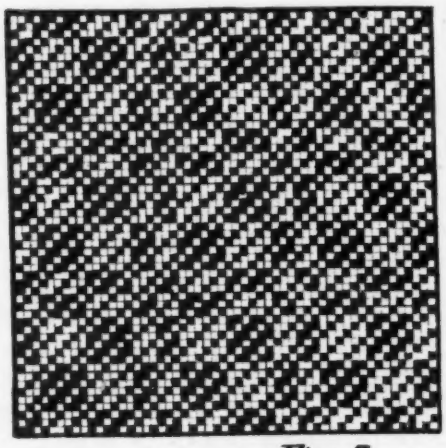


Fig. 5

Weave Fig. 5 has again for its foundation the two 3 harness uneven sided twills, drafting in this instance 3 warp threads and 3 picks for each square after motive "B," i. e., $^{1}_{2}{}^{2}_{1}$ 6x6 fancy basket weave, the resultant skip twill repeating on 54x54.

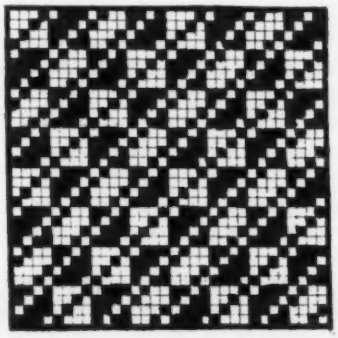
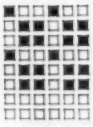
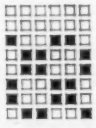


Fig. 6



Motive A



Motive B

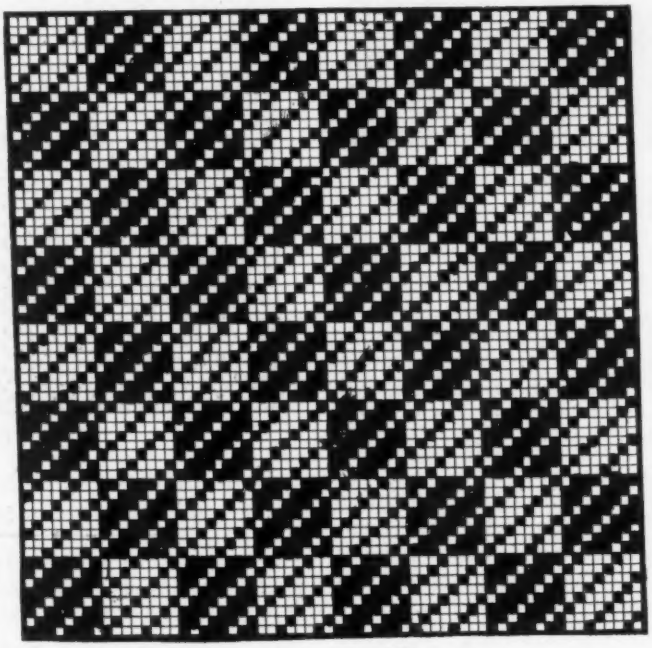


Fig. 7

Weave Fig 6 has for its foundation the $^{1}\!-\!_{3}$ and $_{1}\!-\!^{3}$ 4 harness uneven sided twills. Drafting 4 warp threads and 4 picks of each foundation twill, will in connection with the "plain setting" for the motive, result in the new weave given in Fig. 6, repeating on 16x16, the same being a less prominently interlacing affair compared to its mate effect as given in connection with weave Fig. 1.

Weave Fig. 7 has the same foundation weaves as well as the same motive as the preceding weave, the only difference being that in this instance we drafted 8 warp threads and 8 picks for each square of the motive,

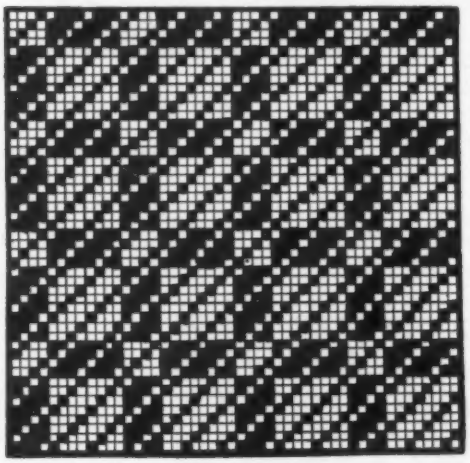


Fig. 8

whereas in the preceding weave only 4 warp threads and 4 picks; the new weave repeating on 32x32.

Weave Fig. 8 has again for its foundation twills the two 4 harness uneven sided twills. Drafting 4 warp threads and 4 picks for each square of the motive "A," i. e., the $^{1}\!-\!_{2}$ 3x3 fancy basket, will result in a new weave Fig. 8, repeating on 24x24.

Weave Fig. 9 has again for its foundation the $^{1}\!-\!_{3}$ and $_{1}\!-\!^{3}$ 4 harness twills. The number of threads used of the foundation twills for each square of the motive are 4 warp threads and 4 picks, the motive itself being given in connection with setting "B," i. e., the $^{1}\!_{3}{}^{2}\!_{1}$ 6x6 fancy basket, the resultant weave in Fig. 9 repeating on 24x24.

Weave Fig. 10 has for its foundation the $_{1}{}^{1}\!_{3}{}^{1}$ and $^{1}\!_{1}{}^{2}\!_{1}$ 5 harness uneven sided twills.

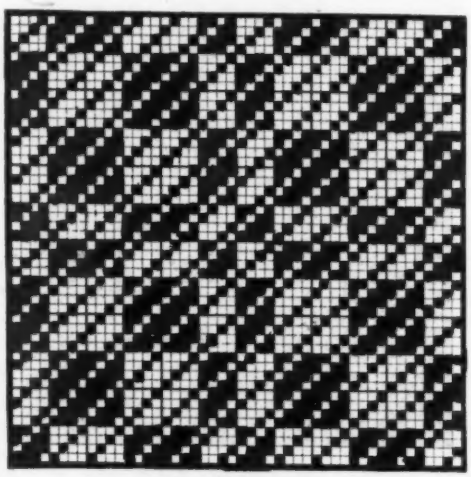


Fig. 9

The motive used is the "plain setting" and the threads drafted of each foundation twill

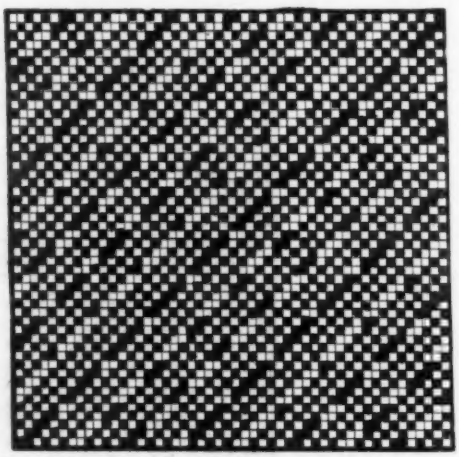


Fig. 10

5 warp threads and 5 picks, giving a repeat of the resultant weave of 50x50.

During the month of May, 1906, the exports of cotton goods from the United States showed a decrease over the same month last year of 22,730,198 yards; the exports from Great Britain for the same period show an increase of 47,298,647 yards.

COMBING.

(Continued from July.)

Lifters to be in Line. See if the lifter-slides on the small shafts are all in a straight line before putting them in place, and also see that these set screws are well tightened. Put brass bushings in detaching roll bearings and place the detaching roll in the bushings. See that this roll and the small lifter shafts are free after the caps are screwed on; they are both under the same cap. Connect the small lifter shafts with the large lifter shaft. The detaching roll should be set to the fluted segments with a No. 21 gauge.

Setting Cylinders. Put on large tin waste chutes, being particular to have each square and true, particularly at the point where they come between the upright stands. Then set the cylinders in the proper place by turning the index gear till number 5 is opposite the pointer. Then turn cylinders on the shafts till they all stand with the front edge of the fluted segment 1 1/8 in. from the back side of the detaching roll. Use the 1 1/8 in. gauge to caliper this distance. Screw the cylinders firmly to the shaft by the set screws at each end of each cylinder. See that each cylinder stands midway of the waste chutes, particularly at the point where they cover the ends of the cylinders.

Draw Head. Put doffer worm-gear shaft in place. Put draw head together and place gears and covers in position and connect with the gear on end of the cylinder shaft.

Setting Top Comb Shaft. Put top comb shaft in its bearing. Screw on the caps and set 7 in. from the back side of the detaching roll to the front side of the top comb shaft.

Setting Brushes. Put in the brush shaft and set the brushes so that the bristles will touch the brass faces of the needle bars. Do not set the brushes hard against the needles.

Setting the Nippers. Put on the cushion plates and adjust them by the small screws at the back, so that the front edge of the cushion plate is the thickness of a piece of writing paper from the lip of the nipper knife. Be sure and have the nipper knife perfectly straight. Fasten the plates securely in place by the binding screws and try the setting after tightening the binding screws. Place the nipper frames all on the floor and connect them with the nipper stands, and slide the feed roll into place endwise, then lift them together into place. Set the arm (with the stop screws in them) about an angle of 31 degrees by adjusting the stop screws. Then set the front edge of the cushion plate the proper distance from the detaching roll. Use only one screw in each frame to make this setting and when cushion plate is set, fasten the top screw you have used with the check nut. After all the frames have been set in this manner, set the other stop screw with the one that is set with paper so that both screw-points in each end will hit the stand at the same time. Four gauges are used for this, ranging from 1 1/8 in. to 1 5/16 in., according to the cotton under operation. While gauging this distance, set the nipper frame up or down until the cushion plate is the thickness of No. 12 gauge from the segment. This is to level the frames merely; they are all reset to the half lap needles later. The nipper knife will now stand at about an angle of 31 degrees. To get more angle on the nipper knife, turn the screws in the upright arm further in. In setting the nippers it is always best to begin in the centre of the machine and work each way.

Setting Feed Roll. Set front side of the feed roll from the detaching roll 1 13/16 in. to 1 15/16 in., that is, if the cushion plate has been set 1 1/8 in. to 1 5/16 in. Put on nipper springs and give a tension by screwing the nuts about 1/4 in. after they begin to draw. Feed roll should start when figure four is opposite the pointer. Set the cross shaft from the feed roll to the corrugated lap rolls.

Setting the Nipper Rods. Connect nipper frames to large nipper shaft. See that rods enter the swivel freely. Turn the comber until the first row of needles on the half laps point to the centre of the detaching roll, or until the pointer is at 14 1/4 on index gear. See that the roll is in high part of nipper cam under the sliver plate. Put stop gauge under the point of the stop screw and adjust nuts on connection rods until the pressure is nearly taken off the gauge. At the same time set the nipper frames up or down until

the cushion plate gauges No. 19 from the needles. Tighten all bolts and check nuts and try gauges again to see if settings have moved.

Timing the Nippers. Set the lever that controls the opening and closing of the nippers so that they will open at 3 1/2 and close at 9 1/4 on the index gear. Do this by moving the cam on its sleeve and by the long adjusting screws.

Setting the Top Combs. See that the tin strip that holds one set of needles stands about 1/32 in. further down than the fixed needles. Turn combing machine until the fluted segment is under top comb needles. Cam should be at its lowest point. Give top comb an angle of about 31 degrees and set it about 1/16 in. from the leather roll. Set dogs on top comb shaft so that all the combs will be lifted at the same time. Gauge combs so that they will stand about 20 gauge from segment. Set cam on end of combing machine so combs will be down when index gear is at No. 5.

Setting Doffers. Put the doffers in place and set them about 1/32 in. from the brushes. Do not have the doffer wire touch the brush; the waste will be nepped if it does. Set the doffer comb the same relation to the doffer as the doffer is to the brushes. Put the doffer covers on castings, setting them so that they are close to the "bite" of brush and half lap on cylinder, and high enough to throw the waste down. Set them close to the doffer on the back side.

Setting Lap Aprons. Put in place the aprons that reach from the wooden corrugated lap rolls to the steel feed roll and see that the brush on the end of the apron strikes onto the steel feed roll. Have index wheel at 14 1/4 in making this setting.

Setting the Top Feed Rolls. Put the feed roll in the bearings and adjust so that the top feed roll is parallel with the feed roll proper. Hook on the springs and give about the same tension as the springs on the nipper frames. Set the wooden corrugated lap rolls to the aprons and adjust the vertical lap fingers so that the lap will feed fair with the aprons.

Setting Lifters. Put the leather detaching rolls in place. See that the flat side of brass bushings on end of these rolls bears against the lifter slides. Attach the roll weights to the stirrups and hang the stirrups in bearings made for them in the brass bushings. Turn the combing machine until the segments come under the leather detaching roll. See that roll in lifter cam, under the sliver plate, is in the highest position. Loosen lifter quadrant and throw the lifters up till the No. 21 gauge will go between the brass bushings and the highest lifter slide. Then set all the other slides, individually, till they stand the same as the first one. Make them all secure and see that there is no chance for them to slip back.

Timing the Leather Detaching Rolls. Place a slip of paper between the lifter slides and the brass bushings and adjust the time to rise and fall by turning the lifter cam on its sleeve, and by the long screws in the quadrant. Have the paper released at 6 3/4, and have the lifter return and tighten the paper again at 8 3/4 on the index gear. The rolls may be left in contact with the fluted segment until 9 1/4 without detriment.

Timing Detaching Rolls. Adjust the large cam at the end of comber on its sleeve, so that the detaching roll will begin to move forward when No. 6 on the index gear stands opposite the pointer. The revolving motion being given to the leather detaching roll through contact with the steel roll, said steel roll should begin to revolve in the forward direction a little before the leather detaching roll reached the fluted segment, so that there could be no chance for a difference in the surface speeds on the rolls and the fluted segment.

Top Detaching Rolls. This roll should simply be set parallel with the steel detaching roll and quite clear from the leather detaching roll. Set this roll the thickness of No. 15 gauge from the leather detaching roll.

Draught of Calender Rolls. Two gears are placed on the cam shaft to drive the calenders, 20 tooth for regular work and 21 in case the sliver in the conductors does not pick up readily, as in damp weather. Either is in position for convenient use. If these gears are changed, a corresponding change must be made in the gear on the back roll

in the draw head. These gears run from 44 to 47 teeth and effect the take up of the sliver on the sliver plate.

RECAPITULATION OF TIMING OF PARTS OF COMBING MACHINE.

Nippers open at	3½	index gear
Nippers close at	9¼	index gear
Lifters down at	6¾	index gear
Lifters up at	8¾	index gear
Top combs down at	5	index gear
Detaching roll moves forward at	6	index gear
Feed roll moves forward at	4	index gear

The foregoing timings and settings are not of an arbitrary nature, but are merely intended as an aid to those whose experience with combing machines is of a limited nature. Experience with many grades of staple will suggest changes which may, with advantage, be adopted in preference to the rules given.

TAYLOR'S IMPROVEMENT TO CLOTH TENTERING MACHINES.

The same refers to what is known as vibratory tentering machines, more particularly adapted to the tentering and drying of cotton goods, especially such where an elastic finish is desired; said tentering machines having mounted a series of automatic cloth clamping devices upon the links of two endless chains, each of which travels in longitudinal tracks supported in stands, by which the cloth under operation is tentered, i. e., stretched and in turn held taut during the drying process. Mr. Taylor's improvement in connection with this class of dryers consists in the novel construction of the endless chains, previously referred to, so as to reduce the friction of the chains during their travel upon their tracks to a minimum.

So as to be able to give a clear understanding of the new construction and operation of the endless chains, including their tracks and gripping devices, the accompanying illustration is given, the same being a transverse sectional view of the said named parts. In said illustration, numerals of reference indicate thus: 1 shows us a portion of the frame-work of the dryer (said frame-work being mounted, i. e., carried upon proper stands, not shown in the illustration, since they are of minor importance with reference to the improvement) and comprises two series of longitudinal tracks indicated respectively by numerals of reference, 2 and 3 and 4 and 5. Each series of these tracks, in turn is occupied by an endless chain (chain 6, in connection with tracks 2 and 3; and chain 7, in connection with tracks 4 and 5), consisting of a series of links, upon each of which are mounted curved arms, 8, carrying at their free ends pivoted gripping-pawls, 9, which in their closed position engage, i. e., grip or clamp, the respective selvage of the fabric, 10. By means of a suitable located centre drive (not shown, since

no connection with the improvement), chain 6 is moved through track 2, with the fabric, returning again, after pawls, 9, have automatically disengaged themselves from the fabric, through track 3, for another engagement of the clamps with the selvages of the fabric and run with the latter, through the machine, in track 2. The same procedure as thus explained is duplicated with chain 7, in connection with series of tracks 4 and 5, working in connection with the other selvage of the fabric.

Sprocket wheels are provided at the end of each track for guiding, i. e., operating the chains between their mate-tracks. Tracks 2 and 4, i. e., the inside, or what we might term the working tracks, are placed in a slightly diverging position with reference to each other in the machine, a feature which in turn will gradually separate chains 6 and 7 from each other and consequently tenter, i. e., stretch the cloth, 10, as is held between the two series of clamping pawls, 9, respectively.

The force necessary for thus stretching the cloth during the process of drying it, as will be readily seen, exerts a pulling strain upon the chains 6 and 7, which in turn is resisted by the engagement of the chains with their respective tracks, 2 and 4, and as the plane of this strain is entirely above said

chains, it naturally exerts a rocking motion upon the chains, in turn producing friction upon certain portions of the contacting surfaces between the chains and their tracks.

Chains 6 and 7 consist of a series of links, provided at their upper edge with overhanging lips, 11, whereas the lower edge is provided with a projecting lip, 12, adapted to run in a groove, 13, in the ways of tracks 2 and 4 respectively, and which are provided with vertical walls, 14, the upper edges of which form a bearing-surface for the overhanging lips, 11, of the links as forming chains 6 or 7 respectively. The links of each chain are provided at their ends with lugs, united by pintles, whereby said links are hinged together. Between the inner lugs of the links are journaled rollers, 15, arranged to bear against the inner surface of the vertical wall, 14, with the upper ends of the rollers, 15, in the same plane as the under side of the overhanging lips, 11, so that the force exerted by the tension of the fabric, 10, will be resisted by the pressure of the rollers, 15, against the inner surface of the vertical walls, 14, and at the upper edge of said vertical wall, adjacent to the plane of the pulling strain exerted by the fabric, 10. This position of the rollers, 15, is accomplished by raising the lugs of the links a sufficient distance above the bearing-surface of the overhanging lip, 11, to admit the lugs as carrying the rollers, 15, thereby bringing the upper ends of said rollers in line with the under or bearing surface of the lip, 11.

A NEW FRENCH PROCESS OF MANUFACTURING ARTIFICIAL SILK ECONOMICALLY.

In the actual manufacture of artificial silk or its equivalent, as now practiced to a certain extent in Europe, it has been the rule, for the sake of economy, to use the least possible quantity of solvent, which is composed of a mixture of ethylic alcohol and sulfuric ether, for the fact that once the desired object is attained—that is, the production of the silk, thread, or equivalent—the solvent mixture is allowed to evaporate, and thus the whole of the solvent employed is lost.

To overcome this trouble of thus loosing the solvent, the inventor of the new process substitutes for the solvent previously referred to, a solvent mixture suited to the nature of the nitrocellulose which it is desired to dissolve—that is to say, a mixture of ethylic alcohol, methylic alcohol, and sulfuric ether, to which is added a certain quantity of castor-oil, palm-oil or glycerin. A very clear and fluid collodion is thus obtained which readily lends itself to the production of filaments or the like, and which collodion is then forced through a suitable nozzle into a water-bath, when part of the solvent is dissolved, after which the threads are wound up and the bath treated for the recovery of the contained solvent.

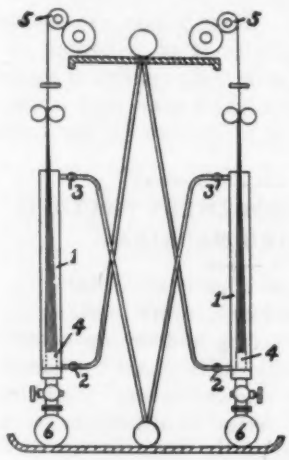


Fig. 1

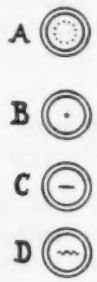


Fig. 2

Of the accompanying illustrations, Fig. 1 shows us in its vertical section the apparatus designed for thus transferring the collodion into thread, etc., as the case may require. Fig. 2 shows us, in their plan view, varieties of the devices necessary, containing different openings, through which the collodion is squirted, which style of opening to use depending on the shape of the artificial silk required.

The collodion when forced through the holes or openings in any one of the different devices shown in Fig. 2 then enters into a water-bath, 1, and where the threads or the

like pass through a gelatinous stage in which they can be drawn out or attenuated to any desired size. During the passage of the threads, etc., through the water-bath, nearly the whole of the solvent employed in the formation of the collodion is dissolved in, or enters into combination with the water, and it is only necessary to regulate the water-inlet, 2, and the water-outlet, 3, to insure that the issuing water shall contain about ten per cent. of alcohol.

The thread, etc., forming nozzle or device, 4, is provided with a number of minute or capillary holes, through which the collodion is forced, by suitable pressure, in the form of fine filaments, which then pass from the nozzle in a straight line upward through the water-baths to the winding rollers, 5.

The water from the bath containing the mixture of ethylic and methylic alcohol is heated to drive off the alcohol, and which then in turn is condensed and collected, and when it only becomes necessary to add again the required weak proportion of sulfuric acid evaporated during the operation and the desired quantities of castor-oil, palm-oil, or glycerin, to obtain a fresh solvent for a further charge of nitrocellulose.

As nearly the whole of the solvent employed is recovered in this manner, the collodion need not be made very thick; on the contrary, it can be economically made very liquid and fluid, with the result that the heavy pressure previously required to expel the collodion through the nozzles may be very much reduced. In consequence of this, the tubes, 6, containing the collodion, may be formed of glass, ebonite, or other suitable material which is inert to, or is incapable of being acted upon by the collodion, a feature which greatly improves the filaments or the like produced.

Another advantage of using a very liquid or fluid collodion consists in the practicability of employing a forming-nozzle with a series of capillary holes, as indicated in diagram A, Fig. 2. The nozzle with reference to its general construction consists of a glass cylinder furnished with a flange, by means of which it may be attached to the cock or tap. At its end is a flanged platinum cap perforated either with the capillary holes, as shown in diagram A, Fig. 2, or with one larger hole, as shown in diagram B, Fig. 2, or with straight or undulatory slits, as indicated in connection with diagrams C and D in the same figure, according to the shape of the artificial product required to be produced. The joint between the cap and the cylinder of the nozzle is maintained by means of a flexible rubber packing-ring, the interior pressure keeping said joint tight.

A STUDY IN WORSTED AND WOOLEN DESIGNING.

COMBINING TWILLS AND BASKETS IN THE FORMATION OF DESIGN.

The combination of our regular twills in connection with basket weaves furnishes the chances for an endless variety of new designs, both for worsteds and woolens, men's as well as ladies' wear. Certainly, as will be readily understood, worsteds will more extensively call for these weaves, still at the same time they continually, more or less, find use in connection with fancy cassimeres and dress goods.

The combination of twills and baskets certainly forms a most interesting study in textile designing, more particularly so on account of the connecting of these two systems of weaves, for the fact that the latter item plays a most important part in the general design. As a rule, a clear cut between the two systems of weaves where joining is the desired effect, a feature which, however, it is not always possible to accomplish, and when naturally either one or the other weave has to be modified in order to produce this required clear cut-off, whereas if this is not done the two weaves will run into each other on two of the sides.

The accompanying two plates of weaves are given to illustrate the subject, and of which Plate I refers to combinations of the $^{2}\!\!-\!\!_{2}$ 4 harness regular twill and the $^{2}\!\!-\!\!_{2}$ 4 harness basket, whereas Plate II shows similar combinations of the $^{3}\!\!-\!\!_{3}$ 6 harness regular twill with the $^{3}\!\!-\!\!_{3}$ 6 harness basket.

Weave Fig. 1 shows the following arrangement:

Repeat of complete weave 16 warp threads

$\frac{2}{2}$ 4 harness twill 8×8	$\frac{2}{2}$ 4 harness basket 8×8
$\frac{2}{2}$ 4 harness basket 8×8	$\frac{2}{2}$ 4 harness twill 8×8

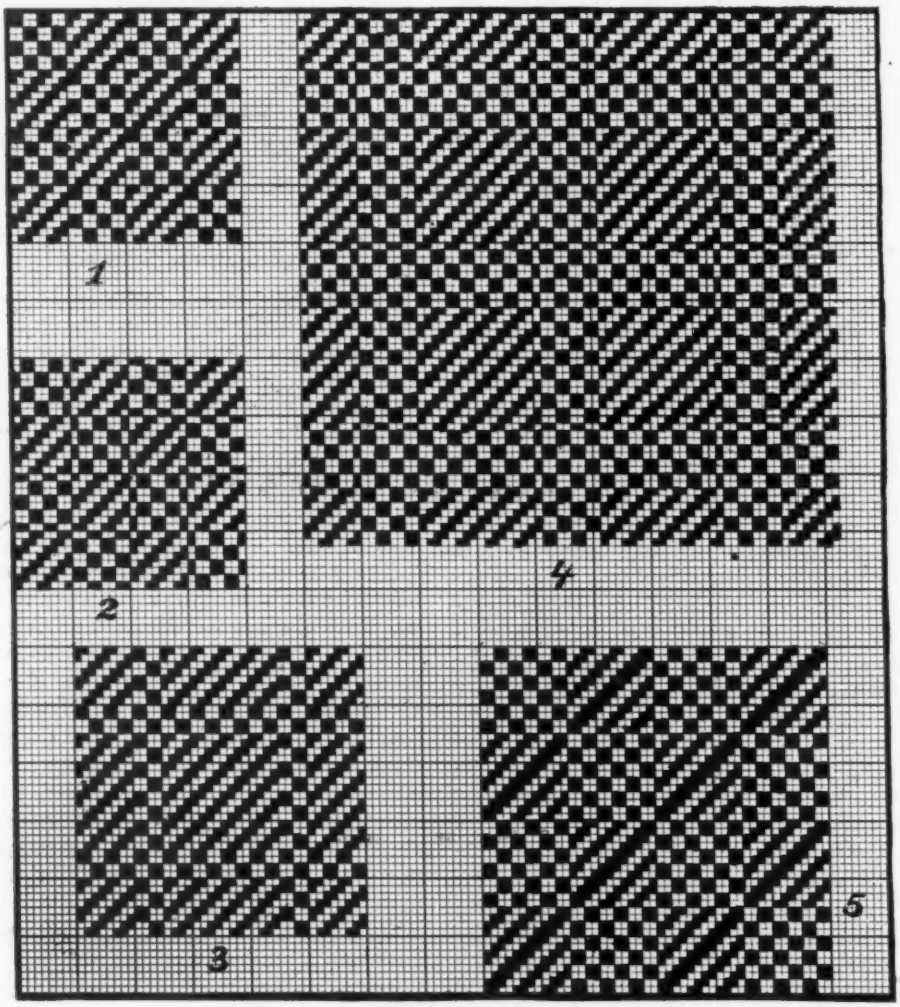


Plate I

× 16 picks. In this instance both weaves are inserted in their regular shape, with the result that on two sides a regular cut-off is produced, whereas on the other two sides the two weaves run into each other, i. e., no prominent cut-off produced. In the same manner as was selected in the present example of a combination weave, 8 warp threads and 8 picks of each foundation weave, it will be readily understood that any even number above 8 can be selected according to texture of fabric and effect wanted; 12, 16, 20, 24, etc., i. e., multiples of 4 (the repeat of each foundation weave) being those most frequently used.

Weave Fig. 2 has for its foundation the same two weaves as well as the same arrangement, i. e., motion (plain setting) as used in connection with the previous example; the difference in the new weave being that in this

case we modified the basket weave in every instance on two sides in order to produce a clear cut-off on all four sides. This modification of the basket, however, is the cause of a larger repeat of the combination weave, although the size of each individual effect is not changed, the new combination weave repeating on 32 warp threads and 32 picks, which by means of its proper drawing in draft can be reduced to as low as 10 harness provided the case requires it; although 16 harness section draw will be the one most advisable to use: (1, 2, 3, 4) × 2; (5, 6, 7, 8) × 2; (9, 10, 11, 12) × 2; (13, 14, 15, 16) × 2. In the same manner as referred to in the previous example, the 8 warp threads × 8 picks for each effect of the "plain motion" may be changed to 12, 16, 20, 24 or more threads according to effect in fabric required; the small number of threads being more particularly used in our example in order to not take up too much room with a large design, the principle underlying the construction of the small weave being identical for larger effects.

Weave Fig. 3 shows the arrangement of the $^{2}/_{2}$ 4 harness twill and $^{2}/_{2}$ 4 harness basket, to produce checking effects:

8×8 twill	4×8 basket	16×8 twill	4×8 basket	8×8 twill
8×4 basket	4×4 basket	16×4 basket	4×4 basket	8×4 basket
8×16 twill	4×16 basket	16×16 twill	4×16 basket	8×16 twill
8×4 basket	4×4 basket	16×4 basket	4×4 basket	8×4 basket
8×8 twill	4×8 basket	16×8 twill	4×8 basket	8×8 twill

Repeat of complete weave 20 × 20. In this instance each foundation twill is used in its proper arrangement the same as was done in connection with Fig. 1, with the result that the two foundation weaves cut-off on two sides and run into the adjoining weave on the other two sides.

Weave Fig. 4 shows a similar check effect, as in the previous example, using in this instance 8 ends basket weave to exchange with 17 ends twill. In this instance we modified the basket weave, similarly as done in connection with weave Fig. 2, in order to produce a clear cut-off on all four sides, the new weave for this reason not repeating until 8 + 17 = 25 × 2 = 50 warp-threads and 50 picks.

Weave Fig. 5 shows effect in which the twill has been changed in order to produce a solid cut-off on all four sides where joining the basket. The motive used is plain setting:

12×12 basket	12×12 twill
12×12 twill	12×12 basket

Repeat of weave 24 by 24. By closely examining the weave, we will see the centre twill line in each of the 12 × 12 squares has been changed from a 2 up to a 3 up, in order to produce the cut-off in each instance where twill and basket join.

Weave Fig. 6 shows the $^{3}/_{3}$ 6 harness twill and the $^{3}/_{3}$ 6 harness basket, exchanged after the "plain motive," 12 warp threads and 12 picks being used for each effect, which number, however, can be changed to any multiple of 3, or better, multiple of 6 (repeat of each foundation weave), in order to increase size of effect. Repeat of weave given is 24 × 24. Examining weave in detail will show us that twill and basket join on two sides and cut-off on the other two sides. 24 harness straight draw, or 12 harness section draw (1, 2, 3, 4, 5, 6) × 2 (7, 8, 9, 10, 11, 12) × 2 are the number of harnesses to use.

Weave Fig. 7 shows the combination of the same two foundation weaves as used in connection with the previously given example, the basket weave, however, in this instance being modified in order to permit the proper joining of the two weaves. 19 ends of basket are used to exchange with 19 ends of twill, resulting in turn in a weave repeating on 38 warp threads × 38 picks, to be executed on the loom on a 12 harness section draw: (1, 2, 3, 4, 5, 6) × 3, 3, (7, 8, 9, 10, 11, 12) × 3, 9.

Weave Fig. 8 is a check effect, produced by using each foundation weave in its regular shape, hence weaves joining on 2 sides and

cutting-off on the other 2 sides; the combination, i. e., motive used being:

9×9 twill	12×9 basket	18×9 twill	12×9 basket	9×9 twill
9×12 basket	12×12 basket	18×12 basket	12×12 basket	9×12 basket
9×18 twill	12×18 basket	18×18 twill	12×18 basket	9×18 twill
9×12 basket	11×12 basket	18×12 basket	12×12 basket	9×12 basket
9×9 twill	12×9 basket	18×9 twill	12×9 basket	9×9 twill

stood, either effect may be increased any number of times 6 ends, without changing the principle or construction of any new weave thus obtained.

Weave Fig. 9 shows another check effect produced with the $^{3}/_{3}$ 6 harness twill and basket, the latter weave in this instance being modified to produce a clear cut-off on all sides where said 2 weaves join. The arrangement used is 19 ends twill overchecked with 6 ends basket, although either effect may be increased 6, or multiples of 6 ends, without changing the principle of construction of the final weave. Repeat of weave 25 × 25, to be

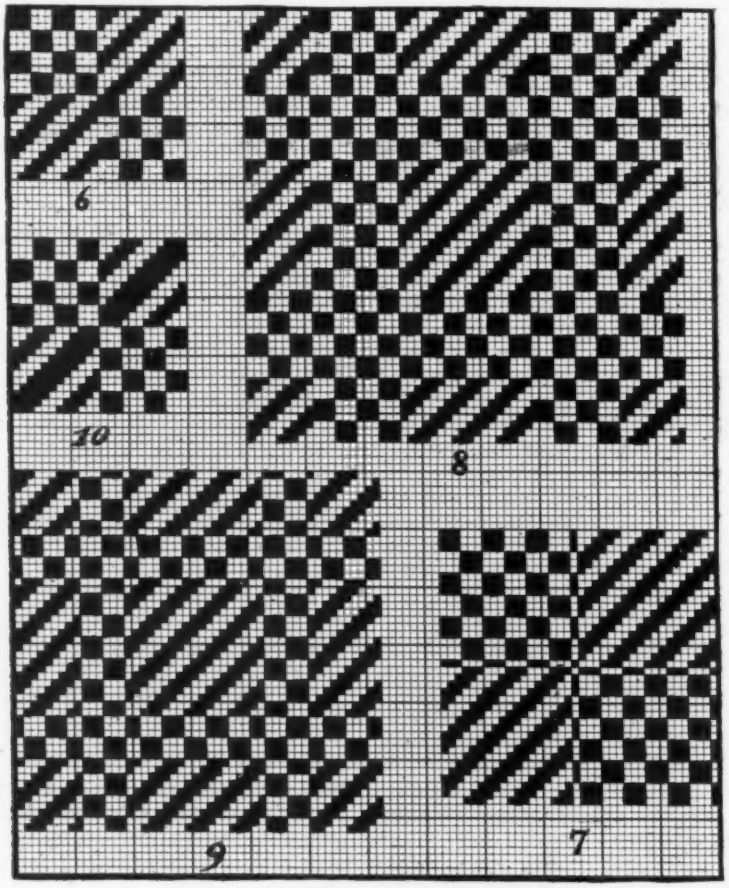


Plate II

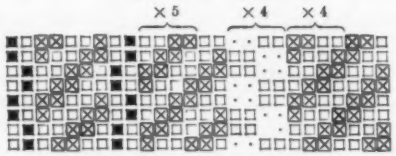
Repeat of weave 30 × 30 to be drawn on 12 harness: (1, 2, 3, 4, 5, 6) × 2, and (7, 8, 9, 10, 11, 12) × 3. As will be readily understood, either effect may be increased any number of times 6 ends, without changing the principle or construction of any new weave thus obtained.

Weave Fig. 10 shows the combination of

the $\frac{3}{3}$—$\frac{3}{3}$ 6 harness twill and basket and in which instance the twill is modified in order to produce a clear cut-off on all sides where the weaves join. Repeat of weave 24 × 24.

FOREIGN NOVELTIES.

Worsted Suiting.



Complete Weave. Repeat 66×4.

Warp—3200 ends, 8 harness, fancy draw.

Reed—12×4=67 inches wide in loom.

Dress—

1 end, 2/42s worsted, black and red twist.
1 end, 2/60s worsted, black.
5 ends, 2/32s worsted, black and dark gray twist.
1 end, 2/42s worsted, black and green twist.
1 end, 2/60s worsted, black.
6 ends, 2/32s worsted, black and dark gray twist.
6 ends, 2/32s worsted, black and gray twist.
3 ends, 2/32s worsted, black and dark gray twist.
6 ends, 2/32s worsted, black and gray twist.
1 end, 2/32s worsted, black.
14 ends, 2/32s worsted, black and dark gray twist.
1 end, 2/32s worsted, black.
6 ends, 2/32s worsted, black and gray twist.
3 ends, 2/32s worsted, black and dark gray twist.
6 ends, 2/32s worsted, black and gray twist.
5 ends, 2/32s worsted, black and dark gray twist.
2 ends, 2/60s worsted, black.
1 end, 2/32s worsted, gray.
3 ends, 2/32s worsted, black and dark gray twist.
1 end, 2/32s worsted, gray.
2 ends, 2/60s worsted, black.
6 ends, 2/32s worsted, black and dark gray twist
6 ends, 2/32s worsted, black and gray twist.
3 ends, 2/32s worsted, black and dark gray twist.
6 ends, 2/32s worsted, black and gray twist.
1 end, 2/32s worsted, black.
14 ends, 2/32s worsted, black and dark gray twist.
1 end, 2/32s worsted, black.
6 ends, 2/32s worsted, black and gray twist.
3 ends, 2/32s worsted, black and dark gray twist.
6 ends, 2/32s worsted, black and gray twist.
5 ends, 2/32s worsted, black and dark gray twist.

132 ends in repeat of pattern (weave twice over in one repeat of dressing).

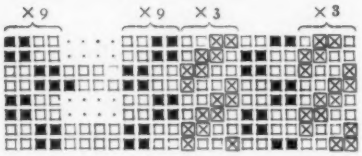
Filling—52 picks per inch, arranged thus:

17 picks, 2/32s worsted, black and dark gray twist.
6 picks, 2/32s worsted, black and gray twist.
3 picks, 2/32s worsted, black and dark gray twist.
6 picks, 2/32s worsted, black and gray twist.

32 picks in repeat of pattern.

Finish—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave. Repeat 104×4.

Warp—3675 ends, 8, 12 or 16 harness fancy draw.

Reed—14 × { 9 dents @ 4 ends; 1 dent @ 5 ends; 8 dents @ 4 ends; 1 dent @ 3 ends; 7 dents @ 4 ends } = 66″ wide in loom.

Dress—

36 ends, 2/36 worsted, black	=	36 ends
4 ends, 36s worsted and bluegreen silk twist	=	4 ends
39 ends, 2/36s worsted, black	=	39 ends
1 end, 2/40s worsted, olive; 1 end, 2/36s worsted, black	× 4 =	8 ends
7 ends, 2/36s worsted, black	=	7 ends
1 end, 2/40s worsted, olive; 1 end, 2/36s worsted, black	× 4 =	8 ends
2 ends, 2/36s worsted, black	=	2 ends

Repeat of pattern: 104 ends

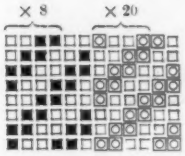
Filling: 56 picks per inch, arranged thus:

1 pick, 2/36s worsted, black; 1 pick, 2/40s worsted, olive	× 4 =	8 picks
8 picks, 2/36s worsted, black	=	8 picks
1 pick, 2/40s worsted, olive; 1 pick, 2/36s worsted, black	× 4 =	8 picks
88 picks, 2/36s worsted, black	=	88 picks

Repeat of pattern: 132 picks

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave.
Repeat 116×4.

Warp—3480 ends, 8 or more harness, fancy draw.

Reed—14× { 1 dent @ 3 ends; 2 dents @ 4 ends; 3 times over; 1 dent @ 3 ends; 20 dents @ 4 ends } = 65½ in. wide in loom.

Dress—

1 end, 3 ply 26s worsted, black	=	1 end
1 end, 2/40s worsted, black and gray twist; 1 end, 2/36s worsted, black	× 2 =	10 ends
× 3 =		30 ends
1 end, 3 ply, 26s worsted, black	=	1 end
1 end, 2/40s worsted, black and gray twist	=	1 end
1 end, 2/36s worsted, black	=	1 end
1 end, 2/40s worsted, black and gray twist	=	1 end
1 end, 2/40s worsted, black and gray twist; 1 end, 2/36s worsted, black	× 18 =	36 ends
1 end, 2/48s worsted, black and red twist	=	1 end
1 end, 2/36s worsted, black	=	1 end
1 end, 2/40s worsted, black and gray twist	=	1 end
1 end, 2/36s worsted, black; 1 end, 2/48s worsted, green	× 2 =	2 ends
1 end, 2/36s worsted, black	=	1 end
1 end, 2/40s worsted, black and gray twist	=	1 end
1 end, 2/36s worsted, black	=	1 end
1 end, 2/40s worsted, black and red twist	=	1 end
1 end, 2/36s worsted, black; 1 end, 2/40s worsted, black and gray twist	× 17 =	34 ends
1 end, 2/36s worsted, black	=	1 end

Repeat of pattern: 116 ends

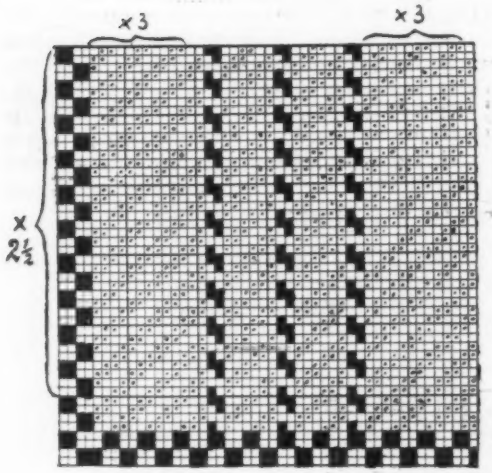
Filling—60 picks per inch, arranged thus:

1 pick, 2/36s worsted, black; 1 pick, 2/40s worsted, black and gray twist	× 58 =	116 picks
1 pick, 2/36s worsted, black	=	1 pick
1 pick, 2/48s worsted, black and red twist	=	1 pick
1 pick, 2/36s worsted, black	=	1 pick
1 pick, 2/40s worsted, black and gray twist	=	1 pick

1 pick, 2/36s worsted, black	× 2 =	4 picks
1 pick, 2/48s worsted, green		
1 pick, 2/36s worsted, black	=	1 pick
1 pick, 2/40s worsted, black and gray twist	=	1 pick
1 pick, 2/40s worsted, black	=	1 pick
1 pick, 2/48s worsted, black and red twist	=	1 pick
Repeat of pattern:		128 picks

Finish—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave.
Repeat 96×108.

Warp—3648 ends, 8 or any number above, harness fancy draw.

Reed—14×4=66 inches wide in loom.

Dress—

6 ends, 2/36s worsted, black	=	6 ends
1 end, 2/60s worsted, dark green	=	1 end
30 ends, 2/36s worsted, black	=	30 ends
2 ends, 2/36s worsted, olive brown	=	2 ends
8 ends, 2/36s worsted, black	=	8 ends
2 ends, 2/36s worsted, olive brown	=	2 ends
2 ends, 2/36s worsted, black	=	2 ends
2 ends, 2/36s worsted, olive brown 8 ends, 2/36s worsted, black	× 2 =	20 ends
22 ends, 2/36s worsted, black	=	22 ends
1 end, 2/60s worsted, dark green	=	1 end
2 ends, 2/36s worsted, black	=	2 ends
Repeat of pattern:		96 ends

Filling—55 picks per inch.

6 picks, 2/36s worsted, black
1 pick, 2/60s worsted, dark green
36 picks, 2/36s worsted, black
2 picks, 2/36s worsted, olive brown
8 picks, 2/36s worsted, black
2 picks, 2/36s worsted, olive brown
2 picks, 2/36s worsted, black
2 picks, 2/36s worsted, olive brown
8 picks, 2/36s worsted, black
2 picks, 2/36s worsted, olive brown
36 picks, 2/36s worsted, black
1 pick, 2/60s worsted, dark green
2 picks, 2/36s worsted, black

108 picks, repeat of pattern.

Finish—Worsted finish, 56 inches wide.

POINTS ON SHEARING WOOLENS.

The object of shearing is to level the more or less irregular length of the nap as previously raised on the face of the fabrics, in order to permit a certain finish required by the particular fabric under operation to be produced. In some cases, this nap is completely removed by the shear so as to produce what we term a clear-face finish, sometimes also called a thread-bare finish, and in which instance the intertwining of warp and filling is clearly revealed to the eye. In other cases, a short nap is required to be left standing, and this more or less erect on the fabric, producing in this instance what we term a velvet finish. Again, in some instances, the nap is laid down on the face of the cloth, producing in this way what is termed a face finish to the fabric, in both instances, the velvet finish as well as the face finish, most of the nap being left on the face of the fabric, the shearing process then having more for its object to properly level this nap, in order to produce a smooth face; the interlacing of the warp and filling threads, as previously referred to in connection with a clear-face finish, not being visible, the same being hid by the nap of the cloth.

Shearing is a very particular operation in the finishing processes of woolen fabrics, requiring besides experience, care and patience. The shear in itself is one, if not the most complicated machines met with in a woolen mill, it being a machine requiring a most careful manipulation by the operator, since any inattention on his part will result in damage to the cloth under operation, impossible to be remedied thereafter. Once holes are cut in the fabric, due to folds or wrinkles forming in the cloth as it passes under the blades of the revolver of the machine, or again provided he shears the nap too low, etc., etc., are items which will make a fabric second, with its consequent loss to the mill.

The same as in connection with any other process in a woolen mill, in order to produce good results, i. e., good work, the first thing to do is to examine the machine which has to do the work, in this instance the shear-

ing machine, more frequently called the shear, and see that the same is in perfect working order, see that the same is set right, that the process of shearing is performed with due skill by the shear tender, that the raising brush of the shear and which is acting just before the shearing operation is also in proper condition for doing its share of the work well.

Besides these main points thus referred to, there are any number of secondary points which must be also considered, all of which, some more, others less, contribute to perfect shearing, the final success of the latter depending upon the amount of attention paid to either point. Thus to be taken into consideration, is the quality of the stock as is used in the construction of the fabric, next the state of cleanliness of the latter, and finally its degree of dryness; keeping at the same time in mind, that apparently insignificant factors occasionally have more important influence than they are credited with, the success of the shearing not alone depending upon the sharpness and setting of the blades besides attention to the leading principles of the process, but it also depends upon the proper conditions of the fabric as received for the process of shearing.

Every shear-tender with experience and somewhat above the root of machine work, i. e., a person paying attention to his work, can not help but notice a difference in the sound of his shear when it works upon a piece of goods, each constructed of a different kind of stock, provided that the blades are not set too close upon the fabric under operation so that the rattle of the parts of the machine drowns the actual cropping noise. It must be readily understood, even by a novice, that the resistance which the brushed-up nap must offer to the shear-blades, will be greater or less according to the quality of the material the nap, i. e., the fabric, is composed of. Without considering at present the different degrees of resistance offered to the blades by the great variety of wools used in the manufacture of woolens, by means of their different diameters, it will be found that wools of the same grade may sometimes offer a varying resistance to the shear-blades, a feature which increases with the degree of injurious manipulations to which said fibres were subjected during wool scouring, dyeing, fulling, etc., it being readily understood that a good wool fibre, of sound growth, is better able to resist, i. e., stand up and not lie down before the shear blades during the shearing process, than a less sound staple, or, worse yet, shoddy would do. Again, a wool fibre in its natural color, or such as dyed bright colors, or indigo, will possess a greater resistance than fibres which have been boiled for hours during their dyeing, dark brown, black, etc. This power of resistance of the fibres as composing the nap will also in turn influence the cleanness of the shearing process, for the reason that a dead and limp fibre will bend over before the shear blades, in turn either being missed by the latter, or at best cut imperfectly at the same height as a sound fibre possessing elasticity. For this reason, fabrics manufactured from limp, dead stock will always shear with less satisfaction than fabrics constructed from a sound stock.

Steam-lustering also has a decided influence upon the wool fibre, which, according to the degree of steaming, loses a part of its elasticity, for which reason a fibre, i. e., a fabric treated in this manner will work differently in the shearing process from one not so treated, and any experienced finisher knows that a steam-lustered cloth is not as easily sheared as one not treated that way, for the reason that on account of the tight winding-up of the cloth upon the steaming rolls or cylinders, according to whether a steam-gig or steam-lustering machine is used, the nap has been pressed down, and in turn has been fixed in this position by the steaming, and when, even though the fabrics may be well brushed up again afterwards, the nap, i. e., the fibres will be always inclined to resume their former position; consequently, the longer and the harder this steaming has been carried on, the greater this inclination of the fibres to lay down, said steaming at the same time reducing the resistibility of the fibres towards the shear blades.

For this reason, all these circumstances, such as quality of the stock used, condition of the fibre, degree of steaming etc., all have

to be considered, the shear-tender in turn employing the proper means to counteract their influence, and when, for example, for a fabric constructed from a soft, flabby, material, he then must have his shear-blades very sharp, the latter touching the nap as far forward upon the edge of the ledger blade as possible.

See that the fabric to be sheared possesses the necessary degree of cleanliness, in other words, that the fibres are entirely free from all impurities, which either cling to it by nature, or with which it has been charged in the various stages of manufacturing, for the fact that it is out of the question to produce a smooth and satisfactory finish upon unclean cloth. Residues, such as yolk, oil, soap, etc., adhering to the fibres make it soft and spongy, as is easily perceived by the feel, and impair its powers of resistance before the shear-blades, tending also to make the latter dull, a feature which in extreme cases may be the cause that the shearing cylinder will occasionally refuse to work altogether, and in place of the short flocks, it will throw out an entangled, flaky mass.

Considered in its proper sense, the condition of the shearing flocks can be considered as a fairly good sign with reference to the degree of cleanliness of the fabric. Soap residues may be more particularly met with in connection with fabrics where from considerations of protecting the wool and cloth against injury, soaps have been used in washing and fulling which are entirely too neutral, and the alkalinity of which has been too small for existing conditions. It is well to use a fat soap in fulling, whereby the softness and pliability of the staple is sought to be preserved, but we must at the same time take into consideration that the cloth contains grease. It is said in favor of neutral soaps that they leave the cloth nice and soft, but the experienced touch will detect at once that this softness is unnatural, giving in turn rise for great difficulty in the shearing process, on account of the fibres giving way before the shear-blades and when the shear-tender will notice that his blades, which possibly he may have ground nicely only a few days since, refuse to act.

Fuller's earth, when at disposal, is a good agent for removing all the loose residues except undissolved fats, that have remained in the fabric from its washing with soap. But this simple agent cannot be employed everywhere, partly because it is not found everywhere and when consequently the heavy cost and consequent expense to the mill forbid its use, and secondly because the fuller evades its employment, on account of the extra time and labor required, whereas others, again, consider it to be an old fashioned process, and omit it as being superfluous; still experience teaches us that even the best soap cannot be always eliminated from woolen goods by a simple washing and rinsing, even though ammonia has been added to the washing bath. If it could be done, to what, then, would be due the soapy odor peculiar to some fabrics washed with soap, as well as its slippery feel? It stands to reason that where both odor and feel are present, the cause producing them must be there also. Let an operator then work such a fabric even if only for a short time on his shear, and he will soon see at places most exposed to rubbing against the cloth, that a white dust deposits itself, an evidence, therefore, that the fabric in question is anything but clean. The washing with fuller's earth, however, in order to be effective, must be performed in a rational manner, otherwise it exerts an injurious influence upon the nap, as well as upon the shear-blades. Fuller's earth, if used, should be of a good quality, neither too sandy nor too fat; the quantity of the solution to use requiring also quite a consideration. However, fuller's earth, if not properly handled during scouring the cloth, will also readily adhere to the fabric and in turn act more injuriously than traces of soap, by quickly dulling the blades. To overcome the trouble of traces of soap in the shape of dust adhering to the fabric, in olden times the fabrics were dusted previously to shearing by drawing them over a trestle, fold for fold, and by violent beating free them from any adhering particles of dust. Finishers, however, now omit this process and prefer to grind their shears oftener, knowing that the cleaner his goods, the more satisfactory the shearing.

The next item which greatly influences

shearing is the degree of dryness of the cloth. Wet, or even damp cloth has characteristics different from those of dry cloth, moisture to a certain degree softening the fibres which then become more yielding, and in consequence of which their power or resistance to the shear blades diminishes, for which reason cloth which is to be shorn must be perfectly dry. This assertion at first glance appears to stand in contradiction with practical experience, which teaches us that damp cloth will shear more quickly and that moist or wet spots in a cloth will shear shorter than the dry portion. This is explained, however, because the cloth at the moist or wet spots becomes much thicker, in consequence of the swelling of the fibre, and for which reason the shear-blades will seize upon it more firmly and cut off more. But it is not alone this circumstance which causes the shortening of moist places, for it must be also considered, and this fact has an important bearing upon the smoothness and good appearance of the cloth in an insufficiently dry condition, that a moist wool fibre is only cut with difficulty, in fact is only chewed off, as we might say, a feature which will result in producing a spotted, blotched surface, bare in spots. For this reason it is of great importance always to have the cloth perfectly dry, i. e., never rush the latter process on account of production or what possibly might be also at the bottom of the trouble, to keep them up to weight as much as possible.

LUSTRE FINISH ON WOOLENS.

This finish in connection with woolen goods is also termed "face finish," and is given to woolen fabrics like beavers, kerseys, uniform cloth, broadcloth, tricots, doeskins and similar fabrics, although cheaper grades of the latter two kinds of fabrics are sometimes finished without the steam process, the finer grades and more particularly those in plain colors, dyed in the piece, being however subjected to this process. The finish of these fabrics is quite different from that given to other woolen fabrics like fancy cassimeres, meltons, cheviots, etc., and for which reason a description of it will be of interest to the reader.

Peculiarities of steam finished goods are its density of nap, entirely covering the body of the threads as forming the fabric, as well as its beautiful, lasting lustre. To obtain the best results in connection with this finish, it is essential that the whole of the work in the manufacture of the fabric, from selecting the stock, scouring, picking, carding, spinning, weaving, etc., is done with the desired result in view, since the flannel as received by the finisher must be in a condition adapted to the peculiar treatment they are to receive during the process of finishing, since otherwise no amount of care on the part of the finisher could produce results required.

In the first place, the selection of the stock is a very important item, calling for a fine quality of healthy wool and this of the very best felting quality in order to get the required felt to the goods at the fulling.

Certainly we will come in contact with goods which are called face finished which are of a cheaper quality of stock, but it must be remembered that upon such goods the best results are not attainable, the finish becoming inferior in proportion as the stock is lowered in quality. After the required grade of wool has been settled upon by the superintendent of the mill, such wool then must be properly sorted so that the lot is to be of that grade as the quality the fabrics in question to be manufactured will require.

After having selected the proper kind of wool to use, see to it that in turn its scouring, drying, dyeing (in connection with wool dyes), picking, mixing, oiling, carding and spinning is done properly. Watch in the last mentioned process carefully the amount of twist put in the yarn, not more than necessary, since too much twist will trouble the finisher to readily raise a full nap as required for these fabrics, without laying the foundation for making the goods tender, again too little twist put in the yarn might result in poor running work at the dresser and more particularly in the loom.

Be careful to use the proper weave, a feature which, however, in the present instance will be less troublesome, since fabrics quoted refer to what we might say standard weaves in their line and where the selection of the wrong weave would at once reveal

ignorance of the superintendent, still at the same time a slight change in the weave might become necessary for one reason or the other. For example in connection with a beaver, in order to produce a softer or again vice versa a harder structure, to work upon by the finisher, we might have to change the stitching of the double cloth structure from plain to an 8 leaf satin, or vice versa; again the weave for the face or the backcloth might have to be changed from a plain to a four harness broken twill, or vice versa.

Goods intended for a lustre, i. e., face finish, must be set rather wide in the reed as compared to fancy cassimeres, worsteds, etc., in order to provide the means for permitting a considerable amount of fulling, a feature which in unison with the good felting quality of the stock used, renders it possible for the finisher to obtain the compact piece of cloth, as requisite when it leaves the fulling mill.

With reference to burling, the work is done the same as for any other kind of goods, and in the same manner the sewing-in, i. e., mending of imperfections as caused during weaving the flannel will need no consideration here, the latter being a great deal more simpler as compared to the similar work required in connection with fancy cassimeres, worsteds, etc.

With reference to the process of fulling the flannel, the principle of the process is the same as in connection with other woolen goods, care being exercised to obtain the best possible results. The density and perfection of the felt as is obtained by proper fulling has much to do with the result, since it is upon this felt that the teasels have to act in the gigging, i. e., to raise a nap which is to form the finished face. Provided an open and thin nap is produced, and which will be the result provided the felting is not good, an undesirable finish will be the result. Use nothing but cold soap, but of a good body, no heat being allowed except that as is generated by the action (friction) of the goods during the fulling process, the amount of heat in the mill being regulated by opening off and on the doors of the fulling mill so that the interior of the mill will not become too warm and the fabric in the process full too rapidly. The cooler the latter is kept during the process, the slower it will full and the better the felt, while quick fulling in turn will produce a comparatively open and spongy felt to the fabric. Shrinking, i. e., fulling the fabric in its length will greatly improve the work, for which reason the fabric should be so constructed in the loom as to call for a certain amount of shrinkage in its length during fulling in order to produce the required finished weight. The quality of the fulling can be improved by overhauling the goods, i. e., taking the goods from the fulling mill and drawing them out width ways several times at stated intervals during the process. Where fulling stocks are at the disposal of the fuller, a good plan, in connection with heavy goods, is to remove them from the rotary mills when within one or two inches of the proper width, and complete the work in the stocks.

With reference to scouring, i. e., washing the goods after fulling, this process does not differ from that of other goods, only that on account of their compactness it will be necessary to allow more time, both in scouring and rinsing them afterwards, to get them entirely free from dirt, grease and soap. The same as with other woolen fabrics, they cannot be properly or satisfactorily finished except they are in a perfectly clean condition after scouring.

In preparing pieces for the gigging process, they should be extracted very lightly or allowed to lie folded over a horse to drain until they are in a suitable condition. Gigging pieces too dry is not recommended, since it will result more unfavorably upon this class of goods than upon any other, since it tends to draw out or wear away the nap, and when it must be remembered that the perfection of the finish largely depends upon the density and evenness of the nap. The best results in gigging these fabrics are secured by the use of a two-cylinder-six-contact rotary-gig, and where the reverse action, i. e., gigging either way upon the piece can be accomplished without the trouble of changing the pieces, as must be done on many of the old style single cylinder machines. This two cylinder six contact gig is

the standard machine with reference to quality and quantity of work done by a gig, and is characterized by its smooth and noiseless running, accomplishing, as will be readily understood, more than two rotary gigs could do, permitting contacts and tensions for each cylinder to be adjusted at will while the machine is running; all the operations being accomplished by means of conveniently located handles on the machine. The power is almost wholly transmitted by belts and chain, there being but four gears in all, a feature resulting in a quiet and easy running machine. There are three applications of the cloth to each cylinder and these are independently adjustable while gigging, so that the gig effect for one run, and this for each cylinder, can be regulated to a nicety; however, if it is desired to apply the cloth but twice to each cylinder it can be readily done. The cylinders may be run in the same or reverse directions by the connecting belt being either open or crossed, a tightening pulley mounted on an adjusting quadrant taking up this belt when it runs open; certainly a handy feature, since it saves splicing the belt when reversing the cylinders. The cloth is carried through the machine by five draft rolls of a large diameter, two of which have large plate frictions. The tension of the cloth can thus be adjusted independently for each cylinder according to its work and direction of rotation, and all while the machine is running. On account of the application rolls being covered with brass, the cloth can therefore be left on the machine over night or any length of time without danger of rust marks. A large diameter stretch roll is located in front of each cylinder, making two to the machine, and their stretching capacity is adjustable so they may be set to stretch the fabrics under operation as much or as little as wanted within their range. The cloth feed can be stopped and the cylinders left running by means of a clutch and lever arrangement. The gigging is done as upon other goods, only it requires more work and a careful experienced hand to make a judicious selection of teasels, and proper changes as the work advances, and to know when it is completed and to avoid overdoing. In this matter it is quite impossible to enter into detail with any directions that would be safe to follow, practical experience being the only guide. It may, however, be well to say, that the process should be started with old and well worn teasels, followed up with a gradual change for better teasels as the work proceeds.

Upon heavy goods it may be found advisable, in fact necessary, to use the cropping shear, and cut off a part of the nap before finishing the process of gigging, in order to allow the teasels to work at the bottom of the cloth structure so as to continually thicken the nap. Never allow the teasels to remain in the gig when they drag upon the cloth so as to wear it and actually become of no service, and when such slats should be taken out and slats containing a better quality of teasels used in their place, keeping constantly in view the fact that the teasel should pick up rather than to drag out the fibres.

When the nap is sufficiently thick, and the goods properly softened, they should be taken to the wet gig, where begins the preparation for the steaming process peculiar to this finish. Gigging done by means of this machine, though termed wet gigging, is really only wet brushing, performed on an up and down single contact gig, using either slats containing old worn out teasels for this purpose, or what is more modern, using in place of it brush lags filled either with stiff bristles or wood fibres.

The purpose of this process of wet gigging, i. e., wet brushing, is to impart smoothness to the face of the fabric and at the same time create some slight lustre. The supply of water must be plentiful for this process, otherwise the effect aimed at will be lost, and besides unnecessary gig flocks produced. The process is always used in connection with a face finish whether the goods are steam lustred or not. The machine in itself is the old fashioned upright gig with a winding attachment. The cloth is run in the usual way, only the bottom roll runs in a trough of water, keeping the cloth continually wet; or a perforated pipe that will give a constant flow of water upon the cloth will answer. This process does not raise or thicken the nap, but straightens the fibres, and lays it

close to the cloth preparatory to steaming. After a few runs on this gig, the cloth is then wound up for steaming.

There are two methods of producing the steam lustre, viz: by means of the steam gig or the steam lustering machine, and we will give both methods.

The steam gig as still in use in some mills practically resembles, or is an up and down gig, the only difference being that its cloth rolls at the top and bottom are hollow, perforated, copper drums, the lower one being set into a trough the same as at the wet brushing-gig, both the top and bottom rolls being suitably connected with steam and water pipes. Both ends of the fabric under operation at the steam gig are supplied with a canvas apron, projecting on each side about one foot outside the width of the fabric under treatment, and of a sufficient length, to permit proper handling of the fabric on the machine. In running the cloth first on the perforated top roll, proper care must be exercised so that the fabric runs on smoothly and evenly and at the same time under as much tension as possible. When the fabric is wound on this roll, its apron is then fastened to the bottom roll and the goods started to run under a strong tension downward and wind on the bottom roll as is revolving in water, supplied to the tank through the bottom roll and its connections. The cylinders of these gigs are also—if so required—clothed with stiff wood fibre brushes, in place of using slats containing old, i. e., more or less worn out teasels. Next the fabric is run again on the top roll, the apron in turn liberated from the bottom roller, run around the roll of cloth and secured to it. When this is done, open the water valve for the top roll and close the one for the bottom roll. When the water is seen to come evenly through the roll of cloth, turn its supply off and admit steam, then cool again with water, run fabric on lower roller, covering it in turn with the other apron, and steam the roll of cloth at once. During running the fabric from one cloth roll to the other, the same receives a good wet brushing by the stiff wood fibre brushes the cylinder of the machine is clothed with. A good strong tension during the winding, and a perfect even winding as well as a thorough cooling by water after steaming, are absolute requirements for the process, otherwise cloudy goods will result.

However, the hollow, perforated rolls of the gig, and on which the rolls of cloth are steamed, are frequently found to be too small for large production, and since on account of lack of room on the gig they cannot be made much larger than seven inches, the demand for an increased production soon led to the building of the modern steam lustering machine. It was soon seen that there was quite a chance to increase the capacity of the machine, and while the first machines of this kind were built with seven-inch cylinder, it did not take long before the at present used eighteen-inch cylinders were introduced, and where it formerly took about 22 inches of cloth to go around the roll of the steam gig it now takes about 56 1/2 inches to go around one of the cylinders of the modern steam lustering machine, certainly a feature which makes it plain that much more cloth can be steamed at the given time with this machine as compared to the steam gig. Again the cylinders being so much larger, they in turn give more chance for a good head of steam to do its work, and therefore we must carefully look after these cylinders in this machine to see that they are in the proper condition, else steam is sure to be wasted, and in consequence production reduced. The principle of steam lustring by means of this machine remains the same, and for all practical purposes the work is in a measure identical with that of the steam gig, as previously described, but on account of the improvements made, it is possible to handle more pieces of cloth at a given time than can be done on the steam gig. With a machine of this kind and large capacity of fabrics it has to continually handle, it is reasonable that extra precautions should be taken to insure the best results, and for which reason a few practical points on how to handle the machine as well as the fabric during the process will not be amiss.

(To be continued.)

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

THE COST OF WOOLEN GOODS.

BY EDWIN VILES.

I have read with great interest in the June number of Textile World Record the article on "Estimating the Cost of Woolen Goods." I agree fully with the writer that on the accuracy of such estimates depends the success or failure of the business, and that all manufacturers will be benefited if every mill is in possession of a method whereby the cost of cloth per yard can be properly determined. Quite frequently goods are offered in the market at prices which are asserted by mill owners to be ruinous and very often the correctness of their assertions is borne out by the fact that the manufacturer of such goods is forced out of business, or continues with impaired capital.

It is comparatively easy to estimate the cost of manufacturing woolen goods if the mill confines itself to the production of one grade of goods, but the task becomes difficult when the mill has to make a variety of goods requiring yarn from one run to seven, some fabrics with 20 picks and others with 70 to the inch. Then it becomes difficult to apportion to each class its proper share of cost of carding, spinning, weaving and finishing and other general expenses.

The writer of this article has worked for a number of years as superintendent of a woolen mill manufacturing a great variety of goods, and has perfected a system that enables him to determine very closely the cost of manufacturing for each variety. He thinks the knowledge he has gained in this particular field may be of benefit to a number of manufacturers and by giving it publicity, may bring out expressions of opinion from others, which will likewise be of interest and benefit to the trade.

Generally speaking, three items are necessary to determine the cost of goods, viz., cost of stock, cost of labor and cost of general expenses. It is easy enough to find the cost of stock. Let us take as an illustration a class of cassimeres made as follows: 2,880 ends, 3 1/2 run yarn, reed 10 1/2 by 4, 68 inches wide, and 48 picks 4 1/4 run.

These goods will weigh from loom 16 1/4 oz. per yard, will shrink while finishing 5 per cent. in length and allowing a loss of 18 per cent. while finishing, will weigh finished 14 oz. per yard. As these goods weigh 16 1/4 oz. from loom and lose 5 per cent. in length while finishing, it is necessary to make corresponding allowance in determining the amount of yarn required per yard of finished cloth. This we do by dividing 16.25 by .95, obtaining 17.12 oz. of yarn.

In every mill, no matter how well regulated, a certain amount of yarn waste will be made, and under unfavorable conditions, that is in making goods out of heavy yarns, using stock about as low as the law will allow and having only 6-inch bobbins and short shuttles, it will be found that yarn waste made will amount to 5 per cent. of the yarn spun. In the case cited 3 per cent. ought to be ample and we therefore add these 3 per cent. to 17.12 oz. of yarn, by dividing 17.12 by .97, which equals 17.65 oz.

In making this yarn a certain amount of waste is made again in carding and spinning. Pure white wool and light shades should lose but little. The loss in flyings, droppings and roping waste should be more than balanced by the amount of oil and water which was put on the stock in the picker room. The writer has not found it unusual to see a certain lot of pure white wool, or another one with an admixture of white cotton, yield in yarn 105 per cent. of the original weight of stock, but it is quite different

when more or less shoddy or waste is used. Then the shrinkage in carding and spinning will amount to something, especially if the colors are dark.

Let us call this a dark pattern made out of 70 per cent. good wool and 30 per cent. of fine shoddy and suppose the loss in carding and spinning amounted to 15 per cent. I know from experience these figures will not be much out of the way. We find the amount of stock necessary for a yard of cloth by dividing 17.65 by .85 = 20.8 oz. stock.

The stock is made as follows:

70% wool, say, 70c. per lb.	$0.49
30% shoddy, say, 22c. per lb.	.066
Cost per lb. of stock	0.556
Cost of stock per yd. 20.8 at .556....	0.7228

In many instances goods do not shrink in length between the loom and the case. The fact is, a good many fabrics stretch in the process of finishing and in such a case, if the stretching amounts to something, say 2 yards to a bolt of cloth measuring 45 yds., 4.4% should be deducted from the weight of from the loom in determining the weight of yarn required per yard.

Our illustration is a simple one, and the estimate of cost of material will become more complicated when different kinds of yarn are used. For instance, when double and twist, say 7 run and 7 run, which is threaded in the warp in place of single 3 1/2 run. Such yarn is made from finer stock and will cost more. I will explain further on how to simplify the calculation in such a case.

As to the cost of labor, I have made it a practice to itemize this cost as follows: Sorting, carding, spinning, spooling, weaving, finishing, dyeing and repairing.

Sorting is done in most mills by the pound and to illustrate our case, let us assume a sorter gets 0.25 cents per lb. and the wool loses 70 per cent. by scouring. In consequence one pound of clean wool of a certain grade costs to sort per lb. 0.833 cents. For another grade, also used extensively, where the shrinkage is only 50 per cent. the cost of sorting will amount to only 0.50 cents. Our pay roll shows that for a period of 12 months we paid $2,400 to the sorters and in the same time to other day help in the sorting room $1,000, or 41 3/4 per cent. of the sorters' wages. Therefore, to arrive at the correct cost of sorting we add 41 3/4 per cent. to the above items 0.833 or 0.50, bringing the actual cost of sorting to 1.43 cents and 0.87 cents per lb. clean.

Carding.—Our card room runs on many kinds of stock, making all kinds of sizes between 1 run and 7. We have a pay roll in the picking and card room which amounts for 12 set of cards on the average, taken from a year's run, to $30 per day, or to $2.50 per set per day. The production of the cards should be followed closely and after a while a superintendent will know how many pounds of stock his cards will produce in one working day. I give herewith a table which may not suit all conditions, but will be correct enough to illustrate our calculations. The cost of carding one pound of stock is obtained by dividing $2.50 by the number of pounds one card can run through in one day.

CARD ROOM COST.

Amount of stock carded in one day and cost of carding per lb. of stock.

Run.	Lbs.	Cents.	Run.	Lbs.	Cents.
1	250	1.00	4¼	100	2.50
1¼	225	1.11	4½	97	2.58
1½	200	1.25	4¾	94	2.65
1¾	185	1.35	5	91	2.75
2	170	1.47	5¼	88	2.84
2¼	160	1.56	5½	85	2.94
2½	155	1.61	5¾	82	3.05
2¾	150	1.66	6	80	3.12
3	140	1.78	6¼	78	3.20
3¼	130	1.92	6½	75	3.33
3½	120	2.08	6¾	72	3.47
3¾	112	2.23	7	70	3.57
4	106	2.36			

Spinning.—Spinners are paid in most mills by the pound. We have, however, some help in the spinning room, such as overseers, fixers, etc., who are paid by the day. Our pay roll shows how much the spinners earned, say, for a period of one year and how much was paid during that time to the day help. We find that the wages paid to the day help amounted to 30 per cent. of the wages earned by the spinners. The spinners are working after a certain price list, which allows them 1.5 cents per lb. for 3 1/2 run yarn. Add to this 1.5 cents the 30 per cent. mentioned above and we know how much it costs to spin 1 lb. of 3 1/2 knit yarn.

Spooling.—We pay the spoolers also by

the piece and have a price list which allows them so much per hole, say 40 cents per 100 holes of 3 1/2 run yarn, more if the yarn is coarser and less if the yarn is finer. Besides the spoolers we have an overseer of spooling and a boy who brings the yarn to the spoolers. From the pay roll we find that the amount paid the day help is 25 per cent. of the wages the spoolers or pieceworkers earned. We add 25 per cent. to 40 cents, which brings the cost of spooling to 50 cents per 100 holes of 3 1/2 run yarn. Our standard guide for the spooling frames is 48, consequently 100 holes with 48 guide is equal to 288,000 lbs. of a single thread, or 288 lbs. of a warp containing 1,000 ends. These 288 yds. cost 50 cents to spool and in consequence 1 yard of 1,000 ends will cost 0.18 cents. As we figure the cost of spooling per yard of cloth we should add 15 per cent. to allow for loss in dressing and for taking up in weaving, which brings the cost of spooling per yard of 1,000 ends to 0.21 cents. One yard of cloth containing 2,880 ends will cost to dress $2{,}880 \times 0.21 \div 1{,}000 = 0.60$ cents.

(To be continued.)

A SPINDLE STRAIGHTENER.

The device for straightening spindles shown in the accompanying illustrations has recently been patented in this country. Fig. 1 is a perspective view; Fig. 2, a section along the line 2, 2; Fig. 3, a section along the line, 3, 3.

At one edge of the table is a hinged strip, adapted to serve as a straight-edge when turned in the position shown by dotted lines in Fig. 3. The plate attached to the table has an elongated slot to receive the spindle carriage. A set-screw is adapted to fit a threaded aperture in the carriage and passes through the slot, as shown in Fig. 2. The shoulder upon the screw bears against the under face of the plate, holding the carriage in position. The ends of the carriage have grooves to receive the spindle. The central portion of the carriage, which is substantially yoke-shaped, is recessed to receive the pulley on the spindle.

Fixed to the upper surface of the table is a series of sockets, each of which is provided with a set-screw. A rod is adjustably held in each of the sockets, the inner ends of the rods being adjusted to the spindle in order

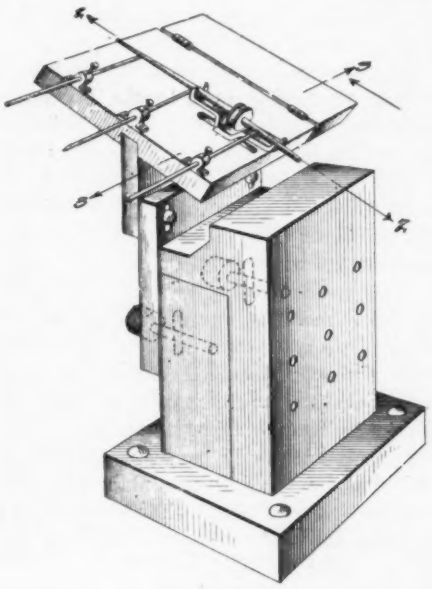


FIG. 1.

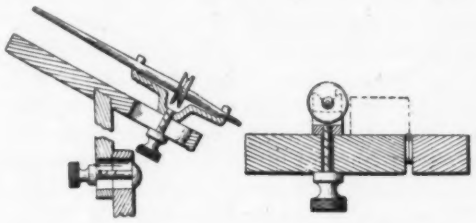


FIG. 2. FIG. 3.

to determine the uneven portions of the spindle as the latter is turned.

When it is desired to use the straight-edge the strip may be folded over on the table, as shown by the dotted lines in Fig. 3. For finer gauging the rods are used. To indicate upon the spindle where certain irregularities appear, the spindle is covered with a powder or other material.

The total value of the wool manufactures imported into the United States in 1905, including carpets, cloths, clothing and yarn, amounted to more than nineteen millions of dollars.

ENGLISH NOTES.

(By Our Special Correspondent.)

Five cents a yard for 40-pick cloth is the usual wage to weavers of the better woolens and worsteds produced in the Huddersfield district; 9 cents is paid for 80-pick goods and 12 cents for 120-picks. Weaving has been done hitherto chiefly upon looms, nominally 80 picks, but actually running at 86 picks per minute on fancies and 90 picks on cloths with plain filling. Newer looms capable of 100 picks or more are being introduced and employers in general have reduced list-prices for weaving on the fast looms by 12 1/2 per cent. This annexation of virtually the whole saving has aroused the natural indignation of weavers. One man, one loom, is the system that has thus far obtained except in those numerous cases where a man is replaced by a cheaper woman. Operatives decline to believe it, but they have been repeatedly assured that by tending one plain and one fancy loom—as men do in other towns where good cloths are woven—they would greatly strengthen their position.

* * *

Our trade-unionists seek to regulate industry by the capacity of the weaker man. The day's work—they say in effect—must be such as he can accomplish without undue discomfort. In the dyeing of raw stock this translates itself into a regulation that the dyeing-machine of 1,000 lbs. capacity shall not be loaded with more than 800 lbs. This is becoming the standard "boil-ful" in Yorkshire, although it involves sacrifices of economy in labor, time, dyestuff and steam. Advances of wages in the dye-works are demanded and probably before these words are printed the operatives of the Bradford Dyers' Association will have lodged their claim to an increase of some 10 per cent., or about two shillings a week.

* * *

Lovers of the curious are fond of speculating as to which industrial process results in the utmost enhancement of the value of the raw material employed. It is customary to award first place to the conversion of crucible steel into watch-springs. But one must reckon with the textile trades, for in the manufacture of artificial silk there is one record that is not to be easily beaten. Wood worth $1.50 makes "silk" worth $750 when worked by the Viscose-Stearn system, as in Germany, and hence the value of the material is multiplied 500 times.

Wood cellulose is treated with soda to produce alkali cellulose and this is converted by carbon bisulphide into the slimy dark-brown substance called viscose. The latter is forced through minute openings at a pressure of forty atmospheres into a solution of sulphate of ammonia. The filaments harden immediately and they serve some of the purposes of real silk. Over 400 hands are employed at Sydowsane near Stettin in this work and a doubling of the capacity of the factory is projected.

* * *

Referring to wool-spinning in Germany, a British consul drops a remark illustrative of the contrarity of experience in separate countries. He writes, "It is very generally felt that large concerns are operating much more profitably than small private ventures and the tendency to merge continues." Where that is so in England it is rather because a large capital permits of large purchases of raw material than because of any other reason. We have few combines in the trade at all and that which is concerned in hosiery yarns is decidedly not operated to more profit than are private ventures. Be it added that worsted spinners of good judgment and good repute are enjoying a more satisfactory year than they have grown accustomed to.

* * *

Great size of production facilities has never been the general aim of English producers of woolens. Our largest self-contained woolen mill contains 66 sets of 60-inch cards with looms and finishing apparatus to correspond and it is understood that America can beat that record. Here, disproportionately large mills are looked on as uncomfortable neighbors. Their pressing need of orders to feed the monster results in reducing prices for themselves as much as for others. The manufacturer's ambition therefore is to keep expansion within bounds and to trust to

make good returns from a plant that is not unwieldy in its dimensions.

* * *

Good results are said to have attended the experiments in sheep culture on the steppe lands of Siberia. Farmers from the Don and Caucasus have occupied large territories south of the railway between Petropavlovsk and Omsk. Quite recently breeding of fine-wooled animals has extended along the Irtysh valley to Altai on the Mongolian frontier. The wool goes to Kharkow and Moscow and fetches good prices, thanks to rich virgin pasturage, absence of dust and the winters, whose severity tends to thicken the fleece. It is observed that the change of run has made the Russian animals more prolific.

* * *

Dealers in the blackberries and other fruits that grow wild in our hedges seek persistently to sell this produce to dyers. It is not known that their juice is ever used in these days. The color is fugitive, is affected adversely both by acids and alkalies and must be stocked while the fruit is in season. Strength for strength, the coal-tar dyes can hardly be dearer and their variety of shades, greater stability and the ease with which they can be obtained put the vegetable matters out of court.

* * *

Natural indigo has been used less extensively partly because its crops have been small for two or three years. Larger supplies are probable during next year but meantime consumers have addicted themselves to the use of synthetic indigotin. The Calico Printers' Association, which is doubtless the largest consumer in this country, is reported to use no other than the synthetic article. In all the other dyeing combines the chemical indigotin is making headway.

* * *

A prospectus which is in private circulation relates to a project for manufacturing twine and spinning-bands from ramie. It forecasts a return of cent per cent per annum on $15,000 capital and it is understood that the process has been worked at a profit in a small way. What is of more importance in the development of the industry is the fact that two of Manchester's foremost manufacturing firms have taken up ramie seriously. Ramie underwear, "Umustan" brand, is advertised freely by Barlow & Jones and ramie also engages the attention of Jones Bros., Ltd.

* * *

American money is said to be forthcoming to assist the peasant workers in Ireland who produce hand-made textiles. The help will presumably be given by way of gift and will be administered by managers in whom confidence can be reposed. It will appear that management quite as much as capital is wanted, for country girls in Donegal are knitting stockings for 3 cents a pair and socks for 2 cents. The yarn is provided for them and the articles sell subsequently by retail up to $2 a pair. In County Down similarly cut-throat payment is made to lace-workers and even this miserable pay is less than it seems. The work is paid in kind, not in cash, and the tea and sugar given in exchange are valued at about twice their normal prices. In these circumstances it will not be surprising to hear that comfortable fortunes—as Irish ones are measured—have been made by trafficking in these productions.

* * *

The assignment of wages to money-lenders and others which is permissible in some of the United States is not practicable in England. A workman may authorize his employer to pay his wages or any part of them to any other person, but the wage-payer is in no way bound to respect that request. Then the workman is at liberty to change his mind, and if he withdraws his authorization the creditor is powerless in at least that direction. Occasions arise when an employer will act paternally as financial adviser and banker to a distressed workman and sometimes with the best results. Employers, however, have a repugnance towards paying the individual who is not doing the work and a mill-manager who thought to escape financial trouble by pledging his future salary found himself cut adrift by his co-directors a while ago.

A MULTICOLORED FABRIC.

The inventor of the Szczepanik photographic process for preparing designs for jacquard looms, but which proved to be too complicated for practical mill work, has brought out another process producing color effects in woven fabrics, which has been patented in this country and is described by the inventor as follows:

The system of threads running in one direction is formed by successive groups of threads that possess the colors corresponding to the three primary colors—blue, green and red—whereas the other system of threads that is crossing the said thread system perpendicularly is formed by white threads or, if desired, by white and black threads. In this manner, owing to the total effect of the colored threads corresponding to the three primary colors and with the aid of the white or of the combination of white and black threads intended for producing the gradations of tints, the pattern of the fabric appears to the eye in the natural colors and tints of the original, similarly to a colored photograph produced after the known method of Jolly, or of McDonough.

The woven fabric is thus composed of groups arranged in juxtaposition and composed each of three colored threads corresponding to the three primary colors, and of white or of white and black threads crossing the first-named groups. For the color effect that is to be obtained it is quite indifferent whether the system of colored threads corresponding to the three primary colors will constitute the warp or the weft. It is advantageous, however, to arrange this system of colored threads as the warp of the fabric,—that is to say, to use the colored threads for the warp and to produce the gradation of tints by a white weft,—because the warp threads can be arranged more densely and for this reason a better total effect of the three threads that correspond in color to the three primary colors can be obtained.

A tissue or fabric produced in the manner described above would, however, possess too loud a coloration, and for this reason it is advisable to use in combination with the three colors a fourth color, such as black, which will be a weft thread when the warp threads are of the primary colors, and a warp thread when the weft threads are of the primary colors, as the case may be. If now the primary colors are given by the warp, the first white weft thread will shade all light-colored parts of the fabric, while the following black weft thread will shade all dark places of the fabric. The weft is therefore alternately white and black. The primary colors may also be expressed in the fabric conjointly both by the warp and by the weft, this arrangement being of advantage in the case of two-ply fabrics.

PLAN FOR A WEAVING MILL.

Figs. 1 to 5 show the ground and elevation plans of a German weaving mill designed for a wide variety of fancy goods. The first row of looms, shown in Fig. 3, consists of 35 looms 40 inches wide; the second row of 35 looms 42 inches wide; next are five double rows each with 35 looms of 40 and 42 inches in width. They are followed with two double rows of 35 looms, 42 and 60 inches wide. The last double row, which follows these, consists of 35 looms of 40 and 72 inches in width. The 630 looms are consequently divided as follows:

70 looms 40 inches wide.
280 looms 42 inches wide.
175 looms 46 inches wide.
70 looms 60 inches wide.
35 looms 72 inches wide.

The weave room joins on a two-story building as shown in the plan. There is a cellar underneath the two-story building for the storage of yarn, etc. The main aisle divides the room, A, into two parts. The room, O, is used for a wardrobe. At the left are the shipping and store rooms, G, N, C. The room, E, is used for the drawing-in and twisting warps. A separate hallway leads to the superintendent's office, K, and the eating and wash rooms, L, L'. The second story is used for the various offices and shipping room. The room, B, is used for warp preparation. The yarn is taken from the cellar storeroom by an elevator and delivered to

Fig 1

Fig 2

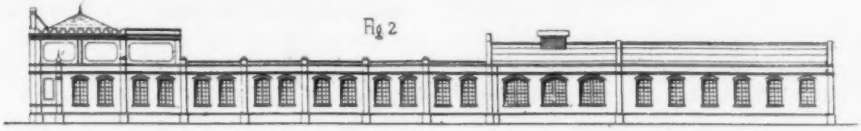


Fig 3

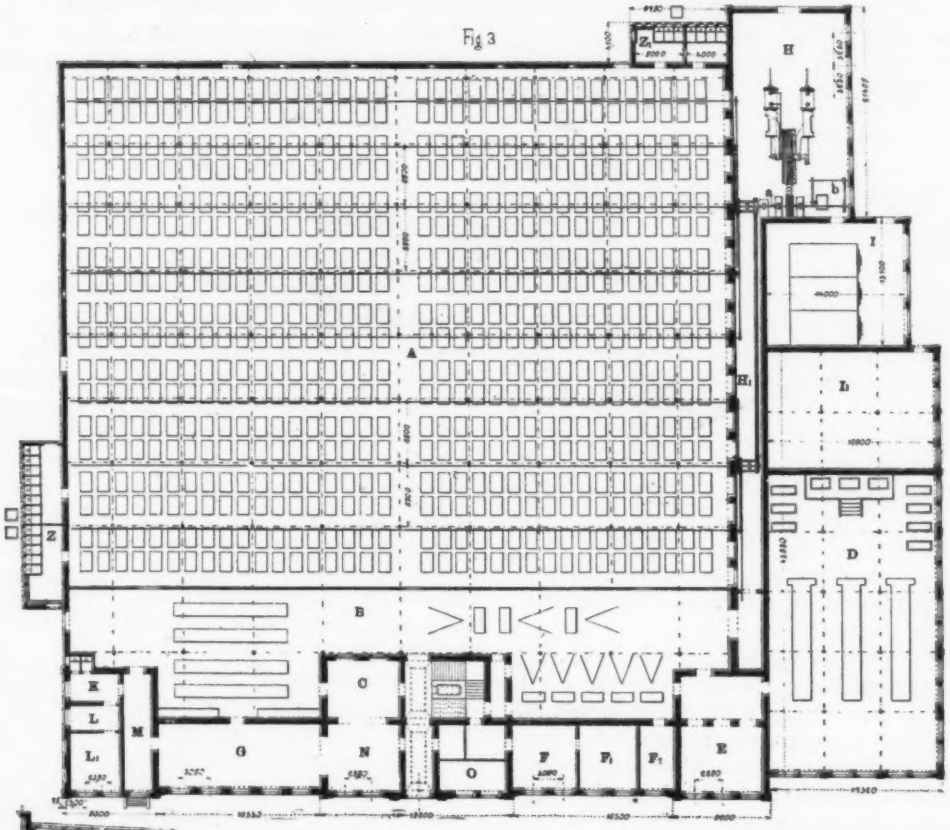


Fig 4

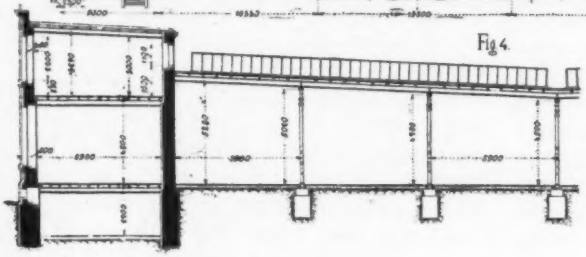
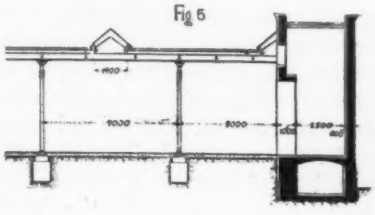


Fig 5



the rooms, C, N. From these rooms the filling yarn goes direct to the looms; the warp yarn is spooled and warped in room, B. The warps are then taken to the sizing room, D, where they are wound on loom beams. The sizing room, D, is light and roomy and separated from the rest of the mill.

The large weave room, A, is 15 1/2 feet high; the roof is supported by cast iron columns, the spaces between them being 21 by 23 feet. Each square contains on an average eight looms. The looms can be placed crossways as shown, or lengthways, the latter arrangement being convenient for transmitting power. The arrangement of the aisles in the weave room enables the operatives to leave the mill quickly in case of an emergency.

Next to the weave room is the beltway, H', the main belts being shown in the plan. At the end of the beltway is the boiler house, H, containing a compound steam engine of 300 h. p., which can be run at either high or low pressure. The engine drives the main shaft by means of twelve 2-inch ropes. From this main shaft the power is distributed as shown. There is a clutch, a, in the power house to stop the mill quickly when desired. There are also a number of clutches in various parts of the weave room. The boiler house, I, contains three water tube boilers, each with 1,600 square feet of heating surface. The repair shop, I', is equipped with the latest tools. The construction of the mill is fireproof throughout.—Uhland's Technische Rundschau.

AN ATTACHMENT FOR WORSTED GILL BOXES.

The object of this device, recently patented, is to set the fibre as it comes from the gill box in the combing room and thus make it possible to proceed with the subsequent processes of drawing without subjecting the stock to the usual conditioning. As shown at Figs. 1 and 2, a jet of water is thrown on the stock as the latter passes from the gill box to a stationary funnel. The water supply is automatically started and stopped with the machine itself. Fig. 1 is a perspective view; Fig. 2, a plan of the device. The wool passes through the rollers on its way to the combing-machine. A suitable bar is arranged in front of the rollers, and a tapering funnel is fixed on the bar. A water-supply pipe is placed on one side of the device and has a perforated horizontal arm, which projects above the wool sliver and discharges water between the rollers and funnel. The amount of water discharged on the wool sliver can be regulated with either of the valves and the entire flow automatically cut off when the gill-box is stopped. As the wool sliver enters the funnel the edges are gradually folded over on the center of the moving strip of wool and the sliver issues from the funnel in a set condition, and by reason of the moisture further manipulation can be at once proceeded with. It is thus not necessary to wait until the wool has become set before running the same to the combing-machines. It is claimed that wool

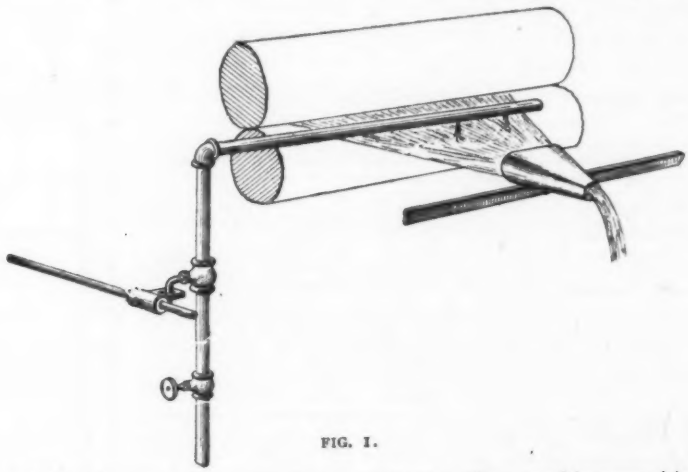


FIG. 1.

thus treated is not only delivered to the combing and roving machines in good condi-

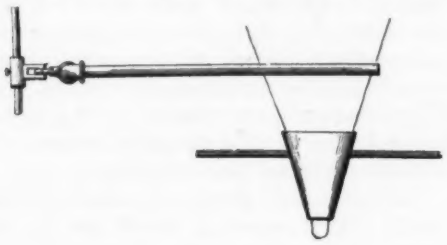


FIG. 2.

tion, but the entire process is greatly expedited.

THE SIZING OF COTTON YARNS.

BY F. SCARISBRICK.

(A paper read before the British Association of Managers of Textile Works.)

SUBSTANCES USED IN SIZING YARNS.

The subject I have to deal with tonight covers such a wide field that it will be impossible for me to do more than treat it very briefly in the time at my disposal. There is such a variety of substances used in sizing, each having different chemical properties or different characteristics, that I cannot possibly deal even briefly with them all. I shall therefore omit some of the least important, and discuss only those in general use. There are many points which will not be dealt with, and as my views may differ from those of many of you here tonight, I shall therefore be glad to answer any questions, or to discuss any matter on which we may differ, at the close of the lecture.

In the first place let us consider what is the object of sizing cotton yarn. As you are aware, this depends upon the class of goods which it is intended to produce. In pure sizing, the yarn is coated with starchy matter to strengthen it, and thus enable it to stand the rubbing and chafing action of the healds and reeds. In this class of sizing there is no attempt to incorporate more size than is necessary to accomplish the above objects. In light, medium, and heavy sizing, however, the yarn has to be more or less increased in weight. It may also require to possess a certain "feel." In some cases the yarn has not only to be weighted, and to have a certain feel, but it must be tinted to a desired shade of color.

The sizer has to obtain these results in such a manner as to give the sized threads as much strength and pliability as possible. There must also be in every class of weighted goods a uniformity in the weight, the feel, and the color; otherwise it will be impossible to build up a permanently successful business in this branch of the trade. The sizer who has to produce goods which vary in the amount of size they contain from about 8 per cent. to 200 per cent. on the twist, and who has also to size yarns having the same percentage of size, but which must possess entirely different "feels," requires some accurate knowledge of the properties and peculiarities of every sizing ingredient he uses. He should also know the resultant action of the various ingredients on one another. This knowledge will enable him to obtain any result he desires by a judicious blending of the requisite ingredients, much in the same manner as a painter obtains his tints by mixing the primary colors.

The ingredients of size are generally classified as follows: (1) Adhesive Substances, (2) Softeners, (3) Weight-givers, (4) Deliquescents, and (5) Antiseptics.

The adhesive substances form the basis of every mixing, whether it be for pure, light, medium, or heavy sizing. Starch in some form or another is most commonly used for this purpose.

Softeners include tallow, waxes of various kinds, oils, soaps, etc.

Weight-givers generally mean china clay.

Deliquescents are used for enabling the sized yarns to hold a certain amount of moisture. Chloride of magnesium is the substance generally used for this purpose, although in some districts chloride of calcium is very often used.

Antiseptics are used for the purpose of preventing the cloth from developing mildew. The one generally employed for sizing purposes is chloride of zinc, although there are many others employed in finishing.

The number of substances which have

been used under the foregoing headings are almost innumerable. I shall treat only of those which experience has shown to be essential for obtaining the best results at the minimum of cost.

The starches used for sizing purposes are the following: (1) Wheaten Flour, (2) Farina, or Potato Starch, (3) Sago Flour, (4) Maize, or Corn Flour, (5) Rice Flour, (6) Tapioca.

Each of these starches is derived from separate and distinct sources; and although they have the same chemical formula, and they all give the same reaction with iodine, yet physically they show a wide and interesting variation. This physical difference relates to the form and shape of the granule, and also to the nature of the outer coating of the granule. (At this point I might state that a starch granule is composed principally of a substance known as granulose, the substance which is turned blue on the addition of iodine; and another substance known as starch cellulose, which is turned yellow on the addition of iodine.) The granulose forms about 95 per cent. of the whole of the granule, while the remaining 5 per cent. is practically all starch cellulose. This cellulose differs in the various starches very considerably; and to this difference, as well as to those already enumerated, is due the variation of the physical properties of the different starches.

It is these physical differences which govern the relative adhesiveness, and the difference in the "feels" imparted to the yarns by the various starches. They also govern the methods of treatment to which each starch should be subjected, in order to obtain the best results in sizing.

I have already stated that the starches are derived from the different plants. Some are obtained from seeds, of which wheat and rice are typical examples; others are obtained from the pith of plants, as in the case of sago; and others again are obtained from roots (tapioca), and tubers (farina).

All these starches have a characteristic appearance when examined by means of the microscope; and it is by means of the microscope only that the source of a starch may be identified accurately, although the keen observer can judge to a great extent by the nature of the paste produced on boiling a sample of the starch with water. For instance, wheaten flour forms an opaque mass, while farina, tapioca, and sago are transparent. Maize forms an opaque paste, which differs from wheaten starch paste, inasmuch as the former is of a granular nature, while the latter forms a smooth paste.

The size and shape of these different starch granules are as varied as the substances from which they are derived. But their physical differences are the chief factors for determining which particular starch is most fitted for certain classes of work, and which may be most economically employed in order to get the desired result. A study of these physical differences will place the sizer in a position to obtain any result he may desire, without resorting to the use of the innumerable sizing nostrums which are so frequently offered to him as a "cure-all" for the faults of sizing.

The starch which was first and is still the most largely used is wheaten starch, in the form of wheaten flour. This flour as delivered to the sizer is a very complex substance. It is composed chiefly of starch and gluten. The granules of starch, especially the smaller ones, are held together in various sized groups by the gluten. If flour is mixed straight from the bag (as in the case of farina, sago, maize, tapioca, etc.), it would produce a harsh feeling and brittle weaving yarn. In order to render it fit for use, it is essential that the groups of starch granules shall be broken up, and each individual granule be separated from its neighbor. This can be accomplished by two methods—namely: fermenting and steeping with chloride of zinc.

OBJECT OF FERMENTING FLOUR.

The process of fermenting flour has been almost universally the one selected in the past for treating flour. It is now, however, being rapidly superseded by the more scientific and more economical method of steeping with chloride of zinc. To discuss the processes of steeping and fermenting in all their bearings would occupy too much time. Let it suffice to say that the separation of

the starch granules can be effected by both processes.

When fermentation is carried out, the gluten in the flour is to a great extent lost, through the chemical action which takes place. There is also a risk of trouble occurring through the flour fermenting too vigorously, and the contents of the beck coming over on to the floor. The characteristic smell, which is a feature of fermenting flour, is, to say the least, unpleasant; and if fermented flour be allowed to stand too long, there is a decided increase in the amount of acid generated, and a risk of putrefactive fermentation setting up. A long fermentation is also destructive of a considerable portion of the starch.

At the same time, it must be borne in mind that there are certain classes of pure sized cloths which do not permit of the use of chloride of zinc, and where these goods are sized with flour the steeping process cannot be resorted to.

OBJECT OF STEEPING WITH CHLORIDE OF ZINC.

Where flour is steeped, chloride of zinc is added to the water in the proportion of 3 1/2 to 4 gallons of the chloride at 102 deg. Tw., to each peck of flour (280 lb.) in the flour beck. This prevents any fermentation taking place, and thus avoids the risks which are run of a too vigorous fermentation. The unpleasant odors from fermented flour are also avoided, and at the same time the antiseptic properties of the chloride of zinc are utilized to the greatest advantage, by being brought directly into contact, with as little dilution as possible, with the substance most likely to develop mildew.

USE OF WHEATEN FLOUR.

Whether it be steeped or fermented, flour can be used, either alone or in conjunction with the other starches, for pure, light, medium, or heavy sizing. When used alone, it imparts a thick, mellow "feel" to the cloth. Sometimes this is not the "feel" desired by the cloth merchants, and in this case it is necessary to use other starches with it.

Where a hard or a sharp crisp "feel" is desired, it will be necessary to mix the flour with maize or rice. These starches are often mixed and sold by the dealers as sizing flours, under special marks. The objection to purchasing such mixtures is that the manufacturer becomes dependent upon a certain dealer for his supply; and if he changes he may alter the whole character of his mixing. It would be to the advantage of the manufacturer if he would depend upon his own resources for these mixings, and instead of purchasing anyone's special mixture, buy a good wheaten flour, and add to it the maize or rice to suit his own requirements. By so doing he would save money, and at the same time become independent of everyone.

The hard "feel" sometimes required in the cloth can be obtained by mixing one part of maize starch to every three or four parts of flour. Too great a proportion of maize is detrimental to good weaving, as it tends to make the yarns harsh and brittle. For a sharp crisp "feel" rice is used in conjunction with the flour. About one part of rice to eight or twelve parts of flour is the usual proportion. Rice produces the worst weaving effects of any of the starches, and it is advisable not to employ it if it is possible to do without.

The time required to render flour fit for use, either by steeping or fermenting, is one upon which there are many different opinions expressed.

The amount of water which should be used either for fermenting or steeping is from 25 to 30 gallons per peck of flour. If too much water is used, and the dashers in the beck are allowed to stop for a long period, the starchy matter will settle out and fall to the bottom of the beck in a hard mass, which can only be removed by "spade work." It is not advisable to mix the whole of the flour with the water in which it is going to ferment, or to steep too quickly. It is better to add (say) four bags the first day, two bags the second day, and one bag the third and fourth days, rather than eight bags in one day.

After the flour has been added to the water, the mixture appears to have a tenacious rubbery appearance for a day or two. This gradually disappears, and in about a week or a fortnight the mixture will look thinner, and will splash about the beck, having a uniform liquid appearance. At this stage it is ready

for pumping into the mixing beck, as the granules of starch are properly separated from one another.

The time required for steeping or fermenting varies with the nature of the flour. A flour with a large percentage of gluten will take longer to work up than one with a smaller percentage of this substance. The best flour for sizing purposes, in my opinion, is one with a large percentage of starch; and if the gluten is of good quality, this may be only moderate in quantity. I believe Egyptian wheat produces a better sizing flour than any other variety.

Flour was the chief adhesive used by the handloom weavers; and time has shown that for good weaving, and a nice mellow "feel," the choice of our forefathers was a good one. The only drawback to it is the length of time required to bring the flour to a fit state for use. This means a locking-up of capital, and involves the use of a greater number of becks, and also requires power to drive them —conditions all making for expense.

(To be continued.)

LIST OF THE OPERATIVES IN AN AMERICAN COTTON MILL.

In another part of this issue will be found a list of the operatives required for an 80,000-spindle English mill equipped with mule spindles. In order to enable comparisons to be drawn between English and American conditions we have asked a number of our correspondents to compile a similar list for an American mill of the same size. Following is the first to be received in answer to this request.

There is no doubt that the mill operatives in this country look after more machinery than in England; possibly the quality of the work would be improved if they were not required to look after so much. Referring to the list of help for the weaving room, I think most of the small weaving mills buy their warps dressed or on section beams and then size them at the mill. The list enclosed is for a mill on 30s. The draft for the different machines is not indicated as the quality of the stock and class of goods might change the conditions to some extent.

CARD ROOM.

1	bale breaker, hands	1
2	opener pickers, hands	1
4	finishers, hands	2
76	cards:	
	Alley boys	4
	Grinders	3
	Strippers	2
16	drawing frames (double drawing 8 frames each), hands	4
6	slubbers, hands	3
12	intermediate frames, hands	6
44	roving frames, hands	22
	Overseer	1
	Second hand	1
	Section hands	2
	Oilers	2
	Sweepers	2
	Roving boys	2
		58

SPINNING ROOM.

72	mules, spinners	36
	Back boys	36
	Doffers	10
	Fixers	3
	Oiler	1
	Filling boy	1
If yarn is put in cases, packers		4
		91

In some mills there are piecers; this would require 36 more hands, but would cost no more and would give very good results. In regard to the office help and yard hands, the location and manner of shipping the yarn must be taken into consideration. Most of the mills in this country have the rolls covered by some firm that makes a business of roller covering.

WEAVE ROOM.

For a room containing only 348 looms the number of operatives depends on the class of goods to be manufactured. It might require only 50 weavers and three loom fixers, and if the yarn was bought on section beams two men on the slashers, and one to help the slasher tenders and look after the drawing-in hands would be sufficient.

348	looms, weavers	58
	Section hands	3

Sizing room, hands	2
Web drawers	3
Cloth room, hands	3
Overseer	1
Engineer	1
Fireman	1
Designer	1
Carpenter	1
	74

GENERAL OFFICE HELP.

Manager	1
Clerks	2
Carpenter	1
Mechanic	1
Engineer	1
Fireman	1
	7
Total	230

Following are two additional lists, one for a yarn mill of 80,000 spindles, with the count averaging 2/60s, and the other for a spinning and weaving mill with 400 looms running on print cloths:

YARN MILL.

80,000 spindles on 2/60s.

Treasurer	1
Bookkeeper	1
Clerks	2
Superintendent	1
Engineer	1
Firemen	2
Machinists	2
Carpenter	1
Watchmen	2
Yardmen	2
	— 15
Card Room:	
Overseer	1
Second hands	2
Section hands	4
Oilers	2
Roving men	3
Picker room men	6
Grinder	1
Helpers	2
Strippers	6
Lap man	1
Drawing tenders	8
Slubber hands	4
Intermediate	7
2d intermediate	12
Jack tenders	24
Doffers and helpers	6
	— 89
Ring Spinning:	
Overseer	1
Second hands	2
Section hands	6
Oilers	4
Roving men	2
Sweepers	8
Doffers	12
Spinners	74
	— 109
Spooling:	
Second hand	1
Oiler and bander	1
Sweepers	2
Spool boy	1
Spoolers	56
	— 61
Twisting:	
Overseer	1
Second hand	1
Section hands	4
Oilers and banders	4
Doffers	16
Tenders	32
Sweepers	4
Warpers	4
Reelers, cone winding, etc.	36
Yarn inspectors	10
Balers	3
	— 115
	389

SPINNING AND WEAVING MILL.

11,000 Mule Spindles, 8,000 Ring Spindles, and 400 Looms.

Treasurer	1
Clerk	1
Superintendent	1
	— 3
Carding:	
Overseer	1
Second hand	1
Grinder	1
Strippers	3
Drawing tenders	3
Picker tenders	2
Slubber tenders	2

Intermediate tenders	3	
Roving tenders	5	
	—	21
Mule Spinning:		
Overseer	1	
Second hand	1	
Spinners	10	
Back boys	6	
Doffers	2	
Spare hand	1	
	—	21
Ring Spinning:		
Overseer	1	
Second hand	1	
Doffers	4	
Roving boy	1	
Oilers and cleaners	2	
Band boy	1	
Spinners	16	
Spooler tenders	11	
	—	37
Weaving:		
Overseer	1	
Second hand	1	
Section hands	3	
Beam man	1	
Smash mender	1	
Slasher man	1	
Warper tenders	2	
Weavers	68	
Drawing-in girls	3	
	—	81
Engineer	1	
Machinists	2	
Carpenter	1	
Fireman	1	
Watchmen	2	
	—	7
		170

MARTIN BARROWS.

The total production of Australian wool for the season of 1905 is estimated at 1,400,000 bales.

The average number of wage earners in the four leading industries of the United States are: textiles, 1,029,910; iron and steel, 733,968; lumber, 546,872; food, 311,717.

MARSEILLES QUILTING.

BY JOSEPH HARGREAVES.

The Marseilles quilting comes under the heading of double cloth. It has been a product in the English market for over eighty years. Like a good many other fabrics the demand has varied with the changing customs of the seasons, yet it has always been with us in a greater or less degree. At one time toilet covers were made very extensively upon this principle, and also today bed spreads are produced upon this particular weave.

Some very beautiful effects are produced upon the principles of the quilting weave. I

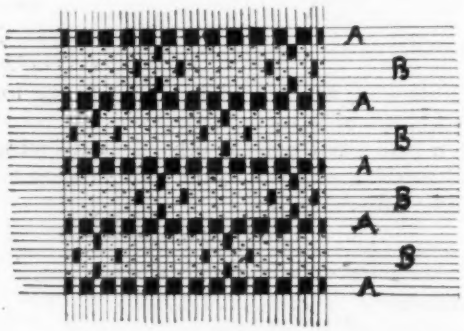


FIG. 1.

will here deal with the simplest of them, such as can be produced on a lappet motion and dobby. In the first place, two beams are used, one which we call the face beam, used to make the face of the fabric; the other we call the back beam, used to produce the figure and form the back of the fabric. There are two sets of harnesses, one to operate the threads of the face beam, and one set to operate the threads of the back beam. The number of harnesses required for the face is two, but in general practice in cam and dobby work four harnesses are used. The number of harnesses for the back is dependent upon the pattern required. Practically speaking, the face of the fabric, or that portion formed by the face threads is plain cloth, the figure or design being made by the stitching threads of the back beam. From the following observations it will be apparent how the figure is produced. Imagine the

face beam working plain cloth upon the four harnesses, and the warp having only a moderate tension.

The back is lifted according to the design

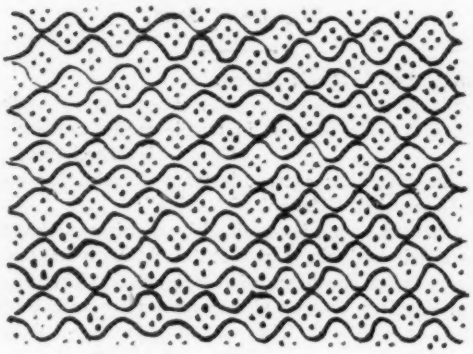


FIG. 2.

required, and held very tight. The tightness of the back threads will cause an indentation whenever they are lifted to the face to be stitched into position by the picks forming the face of the cloth.

The ratio of the take-up on the two beams is about five yards of face warp to four yards of the back warp. There should be practically no contraction upon the tight warp while the face or slack warp will contract about 25 per cent. This contraction varies according to the watchfulness and expertness of the weaver.

There are various qualities of these fabrics. Some are made with one shuttle and others are made with two. Needless to say, the best of them are made with two.

The object of two shuttles is to enable the manufacturer to use two kinds of filling; fine to be inserted in the face and coarse filling to be inserted at the back.

This coarse filling is called wadding. Its function is to go between the tight warp threads and the face slack threads, and fill in the space between the stitching threads of the tight warp so that the raised figure will be firmly held in position and exhibit a good bold pattern.

The warp is drawn in with two face threads upon the four harnesses and one tight thread upon what I will term the figuring harness, the back tight thread going in the centre of the two face threads. This is not absolutely necessary, but it is the usual way. The threads are placed three ends in a split of the reed.

The reed commonly used in these goods was calculated on what is called the Bolton system, which is reckoned on the number of beers of 20 dents to the beer on 24 1/4 inches. We used for the different qualities a 36, 42, 48, 60 and 70 reed, meaning there were so many times 20 dents upon 24 1/4 inches, or equal in our reeds to 29.70, 34.65, 39.60, 49.50, 57.75, dents per inch respectively.

Fig. 1 is the design of what is called the birdseye pattern. A represents the wadding filling; B represents the stitching back warp threads and the face threads working plain.

Fig. 2 represents the appearance of the wadding threads in the fabric. They assume a zigzag shape around the stitching threads, between the two warps; the dots represent the stitching threads. Fig. 3 is the drawing-in draft; Fig. 4, the pegging plan.

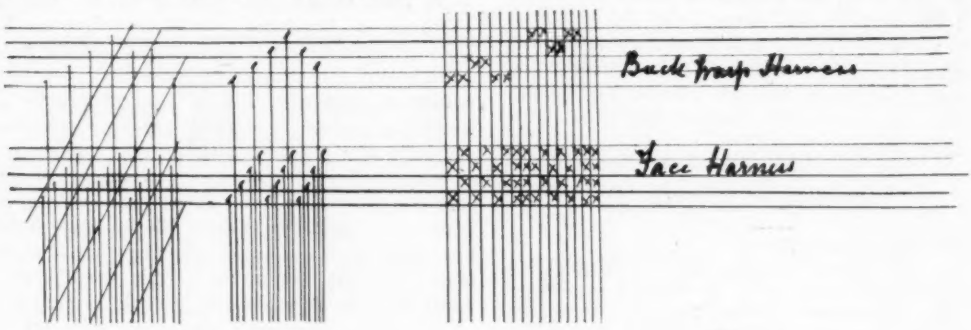


FIG. 3. FIG 4.

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Meaning of the Word "Habutai."

Editor Textile World Record:

What is the meaning of the Japanese word "habutai" as applied to silk goods? Seide (711).

We are informed by one of the leading New York importers of Japanese silks that the word "habutai" taken literally means two feathers interlaced, and refers to the weave construction of the genuine habutai, which is woven with a two-leaf basket weave; that is, with two warp threads working together and two picks in a shed. Some grades of habutai, however, are woven with different weaves and thus are not habutai according to the literal meaning of the term. Only the production from Fukui can properly be called habutai by this strict construction; the Kaga goods are woven with a plain weave, but inserting two picks in a shed; the Kawamata goods are woven with the regular plain weave, that is, with each warp and filling thread woven opposite to the adjacent thread. As a result of this difference the habutai woven with the basket weave has a bulkier feel than goods of the same weight woven with either of the plain weaves.

Clothing on Nappers.

Editor Textile World Record:

How is it that the clothing at the sides of a napping machine wears out at a different rate from that in the centre? I find that sometimes the cards get sharper at the ends than at the middle and other times the reverse is the case. Are the brushes at fault in this matter? Wolfe (694).

The trouble mentioned in this query arises from the fact that the cloth hugs tighter in the centre than at the sides. This is true of any class of goods. As a result the clothing in the centre of the machine does the most work and consequently gets duller more rapidly. The brushes should be set just close enough to clear the workers.

Henry Maine.

This difficulty may be overcome by keeping the cloth at the proper tension and not allowing it to sag on the sides nor in the centre. If it is allowed to sag the brush will wear more on the sides than in the centre. The brush should be kept level at all times. Baker.

Silicate of Soda.

Editor Textile World Record:

Please give me some information regarding the use of silicate of soda in textile manufacturing.

Marshall (669).

The following extract is from Knecht, Rawson & Lowenthal, "Manual of Dyeing":

This compound is obtained by melting sand with soda ash and charcoal. It is met with in commerce under the name of soluble glass, either as a more or less colored vitreous mass, or as a thick aqueous solution. The substance is very soluble in water, but is not deliquescent in the air. The aqueous solution dissociates into acid and basic salts when diluted. Sodium silicate acts as a mild alkali; the commercial article sometimes contains an excess of caustic alkali. The aqueous solution is decomposed by carbon dioxide from the air, and should be kept in well closed vessels.

Sodium silicate was first prepared by Fuchs for the preservation of "fresco paintings" and is still used for this purpose. Textile goods, for example, stage decoration, light dresses, or curtains are impregnated with sodium silicate to prevent them from taking fire. Soap is "filled" with the substance to lower the cost of manufacture; and the addition should not be regarded entirely as an adulteration, as silicate of soda has, like soap, detergent properties. It is also used alone in bleaching, acting as a mild alkali. For certain dyestuffs (for instance, aniline green) silicic acid in a finely divided state serves as a mordant, and is produced on the fibre by saturating the goods with a solution of sodium of silicate, and passing them through a weak acid. Sodium silicate serves also as a fixing agent for certain metallic mordants like the arsenate and phosphate, especially of iron and chromium. Aluminum salts treated with sodium silicate do not readily attract the coloring matter from the dyebath, and do not yield such bright shades as when mixed by the arsenate. This is owing to the fact that silicic acid, being a very weak acid, does not readily combine with the aluminum hydroxide so that the precipitation of the latter is more or less prevented by the basic silicates, which are generated by dissociation. Besides, the commercial product contains an excess of caustic soda, which would cause the removal of the mordant from the fibre in the form of a soluble aluminate of sodium. Iron and

chromium oxides, on the other hand, which are not soluble in the alkali, are well fixed by sodium silicate.

Rope Transmission in Textile Mills.

Editor Textile World Record:

Why are ropes for the transmission of power in the textile mills of the United States of America not so commonly used as in other industrial countries? Hiram (693).

Our correspondent makes an assumption that we hardly think is justified by the facts. His question will probably apply equally well to other manufacturing industries using large amounts of power. There is no definite data on the subject, but it is doubtful whether rope transmission is not in equally general use here as abroad. The extension of the use of the rope drive in this country within recent years has been very rapid and the conditions of only a few years ago have radically changed.

An authority on this subject, who was consulted, replies:

"We believe it is true that the rope drive was introduced and developed in England and European countries before its general adoption in this country, so that in times past this means of transmission was used more freely abroad than in the United States. As to just how that condition happened to come about at the time we are hardly prepared to say. When power users began to adopt some system of band transmission in place of transmission by gears, which had been previously used for large drives, it appears that in this country leather belting was largely adopted and rapidly and carefully developed as a means of connection, while in England instead of adopting leather belting so widely, the rope drive came into favor.

"However, the advantages of the rope drive have now become very widely known and appreciated in this country and ropes have rapidly replaced belting in many places on the main drives of plants using a large amount of power. We might say that this condition is very noticeable among textile mills, and especially among the newly constructed mills of our southern states.

"We believe that although first used abroad the rope drive at the present time will be found in a more highly developed state in the United States than anywhere else in the world. The fact that American manufacturers have a large demand for their manila transmission rope in foreign countries has proven that so far as the construction of the transmission rope itself is concerned this country must be in the front rank."

Horizontal and Vertical Rings.

Editor Textile World Record:

What are the relative merits of horizontal and vertical rings for twisting cotton or worsted? I understand that wet twisting is done on the vertical ring, but that the horizontal ring is preferred for dry twisting. What is the reason? Is it the cost of the rings, or the travelers, or the wear and tear, or all these factors together?

Brooks (691).

Vertical rings are never used for worsted yarn. Wet twisting and vertical rings with bronze travelers are used only for sewing thread as they do not rust so soon. My experience has been entirely on worsted yarns with the horizontal rings.

Cumberland.

I have never used vertical rings as we always twist worsted in the dry state and have the ring in the horizontal position, the spindle being upright. For a vertical ring the spindle would be horizontal and could not be driven at so high a speed as the regular gravity spindles are driven, that is from 6,000 to 8,000 r. p. m. I should think the cost of the rings would be the same whether they are used vertical or horizontal. Quinn.

I have always found that the horizontal ring will not put in regular twist on wet stock and will not run up to speed. I am told that the cost of running them on wet stock is fully 15 per cent. more than on the other ring, though I never could understand why it is so. However, it is certain that the wear and tear on the horizontal ring is considerably more than on the vertical ring when on wet stock. Saco.

Vertical rings are used for wet twisting for two reasons. First, as the yarn carries with it a certain amount of moisture or water from the trough to the traveler and ring it is clear that with a steel traveler a certain amount of rust would accumulate on the ring and traveler. In the case of the rings a little tallow or sperm oil will keep them clear enough to work freely; on account of the peculiar action and duty of the traveler it would be difficult to keep this part sufficiently clear from rust to prevent undue and unequal strain on the yarn and the wear of the traveler and ring. Second, if a composition traveler was made for horizontal rings, they being soft and pliable to a certain extent, it would increase the cost of supplies. These vertical rings are especially used on thread and lace yarns and some knitting yarns, the particular advantage being that the fibres and twist are set better and give a more smooth and compact thread than yarn twisted dry.

The reason for preferring the vertical ring for dry twisting may be summed up in the last few

words of the question: the cost of the rings, the travelers and the wear and tear. J. T. B.

Washing Machine for Silk.

Editor Textile World Record:

Can you give me the address of a firm making a washing machine for washing skeins of silk after it has been dried? We understand there are large porcelain hubs over which the silk is hung. As these hubs revolve, turning the skeins, a jet of water is continuously applied to the silk.

Mohawk (704).

The Watson Machine Co. of Paterson, N. J., build such a machine. It is made with 16, 20, 24 or 32 spindles.

Cost of Cotton Dress Goods Mill.

Editor Textile World Record:

We are thinking of starting a cotton dress goods mill to make 30-inch goods on about 300 box looms; we would also like to spin our own yarns unless we could buy them to better advantage. Can you give us the specifications for the cost of such a plant, not including the building?

Middlesex (685).

Specializing in textiles is becoming more pronounced in this country, that is, the making of cloth is separate from the making of yarns. Within a few miles of this town (Lowell) there are six mills where cotton, woolen, worsted and linen cloths are made exclusively and all are paying large dividends for this reason. I think Middlesex could run with profit the plant outlined below:

First of all he needs a designer who knows his business, for on the originality and attractiveness of the designs depends the success of the mill. More preparatory machinery is required in proportion for cotton dress goods than for staple goods; still more machinery would be required if colored yarns were woven. In this instance we are considering only white goods. The machinery mentioned below is based on the assumption that the mill is to weave cloths similar to a fancy mercerized stripe, 80 threads and 48 picks per inch; warp, 2/14s and 1/40s; filling, 2s; average three pieces a week. This would require.

2 slashers at $1,100	$2,200.00
5 warpers at $120	600.00
1 warper for beaming top beams	135.00
6 creels for warpers at 12 cents per spindle	288.00
15 spoolers, 100 spindles each, at $2.55 per spindle	3,825.00
4 quillers or bobbin winders, skein and spool, at $125	500.00
8 drawing-in frames at $25	200.00
4 twisting frames at $25	100.00
400 fancy dobby looms, 4 by 1 boxes, at $175	70,000.00
Extra beams, top and bottom, $2.50 to $7.00 each	500.00
Reeds, harness and other incidentals	500.00
	$78,848.00

Will Nelson.

The Momme Standard for Silk.

Editor Textile World Record:

Please give an explanation of the momme standard as used for Japanese silk.

Morris Butler (708).

The momme is a Japanese standard of weight equal to 57.972 grains (7.55 momme per ounce). For convenience in reducing to English standards 7 1/2 momme is taken commercially to be equal to 1 ounce, the difference being negligible in practice; by this commercial standard the momme is equal to 58 1/3 grains (7 1/2 momme per ounce). The weight of Japanese habutai is indicated by the weight in momme of 25 yards one Japanese inch (1 1/2 English inches) wide. Reckoning 1 ounce as equal to 7 1/2 momme, the momme standard has the following English equivalents:

58 1/3 grains (1 momme) per 25 yards 1 1/2 inches wide (1,350 square inches).

56 grains per square yard (1,296 inches).

1 ounce per 25 yards 11 1/4 inches wide (10,125 square inches).

.128 ounce per square yard (1,296 square inches).

1 pound per 125 square yards.

To find the total weight of a piece of habutai the process is as follows:

Ex. Find weight of a piece of habutai, 5 momme grade, 50 yards long, 27 inches wide.

27 (inches) ÷ 1 1/2 (inches) = 18 Japanese inches.

25 yards weigh 5 momme for each Japanese inch. Then:

18 (Japanese inches) × 5 (momme) = 90 momme, weight of 25 yards.

90 (momme) × 2 = 180 momme, weight of 50 yards.

180 (momme) ÷ 7 1/2 (momme per ounce) = 24 ounces, weight of 50 yards.

The reverse of this operation is as follows:

Ex. A piece of habutai 50 yards long and 27 inches wide, weighs 24 ounces (180 momme). Find the momme grade.

27 (inches) ÷ 1 1/2 (inches) = 18 Japanese inches.

50 yards = 2 lengths of 25 yards each.

18 (Japanese inches) × 2 = 36 standard areas.

180 (momme) ÷ 36 (standard areas) = 5 momme, grade.

The momme standard can also be calculated as follows:

Ex. 24 pieces of habutai, each 50 yards long and 27 inches wide, weigh 36 pounds. Find the momme grade.

Momme grade = pounds per 125 square yards.

24 (pieces) × 50 (yards) = 1,200 yards, 27 inches wide (3/4 yard).

1,200 (yards) × 3/4 (yard) = 900 square yards.

900 square yards = 36 pounds. Then:

4,500 (36 lbs. × 125 sq. yds.) ÷ 900 (sq. yds.) = 5 momme, grade.

The square yards per pound are found as follows:

125 (sq. yds.) ÷ momme grade = square yards per pound. Thus, in preceding example,

125 ÷ 5 (momme grade) = 25 square yards per pound.

To determine the momme grade from a small sample the operation is as follows:

Momme grade = 56 grains per square yard. Then:

Grains per square yard ÷ 56 = momme grade.

The grain weight of one square yard is readily found from the weight of a small sample of known area, say, 1/300 square yard (4.32 square inches), which can be cut by a die 1.8 inches by 2.4 inches.

Ex. A sample of habutai, 1/300 square yard in area, weighs 1 1/2 grains. Find momme grade.

300 × 1 1/2 (grains) = 450 grains per square yard.

450 (grains) ÷ 56 (grains) = 8 momme, grade.

When a standard die (1/300 sq. yd.) is not available the calculation can be made with the weight of any given area. Thus:

Ex. A sample of habutai 4 square inches in area weighs 1.7 grains. Find momme grade.

2,203 (1.7 gr. × 1,296 sq. in.) ÷ 4 (sq. in.) = 550.8, grains per square yard.

550.8 (gr.) ÷ 56 (gr.) = 9.8 momme, grade.

In determining the momme grade from the weight of a small sample it is necessary to weigh the latter very closely because of the very light weight of the goods. For the same reason it is best to weigh as large a sample as possible.

It should be remembered that these calculations are based on the commercial equivalent of the momme (58 1/3 grains or 7 1/2 momme per pound) and that the exact equivalent (57.92 grains or 7.55 momme per pound) is 5/8 per cent. smaller. The difference is usually negligible, being within the limits of unavoidable variations, but where extreme accuracy is required an allowance of 5/8 per cent. must be made.

The Japanese use two linear standards, called long and short measures. Long measure is called literally "whale" measure and used exclusively for dry goods. Short measure is called "metal" measure and used principally by artisans. Both are used with the decimal system, the various units being decimal multiples or divisions of each other. The Japanese metal inch or sun is equal to 1.193 English inches; 10 inches or sun make 1 shaku, or foot, equal to 11.93 English inches. The Japanese metal foot, or shaku, thus varies but little (1/120) from the English foot. For many purposes this difference is negligible.

The long or whale measure is used for textiles and is based on a foot or shaku of 15 English inches. A long or whale sun is one-tenth of a shaku and equal to 1 1/2 English inches. Following is the Japanese table of linear measures, with English equivalents for both the long and the short measures:

		Dry Goods or Long Measure.	Metal or Short Measure.
1 shi	=	.00015 in.	.0001193 in.
10 shi = 1 mo	=	.0015 "	.001193 "
10 mo = 1 rin	=	.015 "	.01193 "
10 rin = 1 bu	=	.15 "	.1193 "
10 bu = 1 sun	=	1.5 "	1.193 "
10 sun = 1 shaku	=	15. "	11.93 "
10 shaku = 1 jo	=	150. "	119.3 "

An important feature of Japanese linear measures is the commensurability with or close approximation to the English inch. This will unquestionably prove an important factor in the unification of weights in measures in Japan and English speaking countries, by facilitating the concurrent use of both the English and Japanese systems, and the substitution of one for the other. Already considerable progress has been made in this direction.

The Japanese use a decimal system of weights as follows:

		1 rin	=	.57972 grains
10 rin	=	1 fun	=	5.7972 "
10 fun	=	1 momme	=	57.972 "
100 momme	=	1 hiaku-me	=	5797.2 "
1000 hiaku-me	=	1 kwamme	=	57972. "

Ammonia in Wool Scouring.

Editor Textile World Record:

Is there any other form of ammonia besides aqua, such as carbonate or sulphate, that would be more economical in wool scouring than the liquid? Elm Hill (682).

A number of wool scourers to whom we have addressed inquiries advise us that they know of no other form of ammonia for wool scouring than the aqua, and that is very economical and convenient.

Cause of Difference Between Two Elastic Fabrics.

Editor Textile World Record:

Enclosed are samples of two elastic fabrics, 1 and 2. I would like you to explain the difference between them. Is it due to variations in the weave, material, or finish? We want to duplicate the sample marked 2 and the sample marked 1 is the best we have been able to make thus far.

Henry Barnes (703).

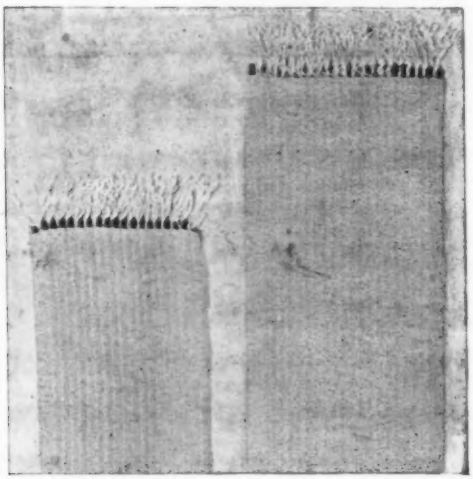


FIG. 2. FIG. 1.

We have analyzed the samples submitted and find that the construction is as follows:

No. 1.—Width, 1 5/32 inch.

Weight per inch, 5.9 grains.

Cotton warp, 126 threads, 109 threads per inch, 2.1 gr. per running inch.

Rubber warp, 22 ends, .9 gr. per running inch.

Filling, 132 picks per inch, 2.9 gr. per running inch.

No. 2.—Width, 1 inch.

Weight, per inch, 6.2 grains.

Cotton warp, 88 threads, 88 threads per inch, 1.6 gr. per running inch.

Rubber warp, 19 ends, 1.2 gr. per running inch.

Filling, 142 picks per inch, 3.4 gr. per running inch.

The results of the analysis disclose a marked difference in the two fabrics. The weight per running inch is approximately the same, but sample 2, which it is desired to duplicate, is one inch wide and has 88 cotton threads in the warp, while sample 1 is 1 5/32 inches wide and has 126 cotton threads in the warp, or 109 per inch. There are 20 per cent. more threads per inch in sample 1 than in sample 2. The weight of the cotton warp in sample 1 is much greater, being 2.1 grains as compared with 1.6 grains in sample 2. There is also a difference in the number of rubber ends in the two fabrics, sample 1 having 22 ends; and sample 2, 19 ends. The rubber in sample 2 is much heavier than in the other sample, as the 19 ends in No. 2 weigh 1.2 grains, while the 22 ends in No. 1 weigh only .9 grain. Sample 2 has ten more picks per inch than sample 1 and the weight of the filling per running inch in the former is about 12 per cent. heavier than in the latter.

These differences account for the difference in the appearance of the goods. The greater amount of filling and rubber in sample 2 causes the warp rib to come up round and full. It will also be noticed that the groups of cotton threads between the rubber ends in sample 2 contain each 5 threads, while those in sample 1 are composed of 6 threads each. The side groups in sample 2 have one less end, or 4, on each side. If the structure of sample 1 is changed to conform to that of sample 2 there is no doubt that a very close match can be obtained.

Structure of Cotton Goods.

Editor Textile World Record:

Please give me the following information in regard to staple cotton goods, such as nainsook, drill, ticking, twills, sheetings, sateens, silesia, percaline: number of yarn in warp, and filling; number of picks per inch; width in loom, finished width, price per yard wholesale, and yards per pound.

Mohair (705).

The construction of these goods varies so widely in different mills that the information can best be obtained by securing samples of the goods and then analyzing them according to the method explained on page 126 of the March issue of the Textile World Record.

Glue for Iron Rolls.

Editor Textile World Record:

Please give me a receipt for glue for iron rollers. I am having considerable trouble to make the leathers stay on the rolls with the glue I am using.

Norfolk (686).

First wash the roll with ammonia, then after wiping it dry put on a coating of sulphuric acid. Rinse off the acid with cold water and wipe perfectly dry, then allow the roll to stand for a while until it is absolutely certain that there is no moisture on the part to be covered. Next apply a thin coating of fish glue to the surface of the roll and

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The past month has developed a very well sold up condition in the summer line of knit underwear. Orders have been larger than usual and selling agents report this to be the case in all lines of ribbed goods for men and women, as well as men's balbriggans. In consequence of this, some manufacturers have advanced their prices and have found it about as easy to dispose of their goods at the advances asked, as at original prices; so that at the present time, prices are ranging about 7 1/2 to 10 per cent. higher than opening prices of last year.

A great many buyers have come into the market from three to four weeks earlier than usual this year and have endeavored to impress upon the minds of salesmen that their reason for doing this is to get their orders booked early in hopes of getting better deliveries than they have this year. It is possible that manufacturers will be able to make better deliveries on account of having orders booked earlier.

It is now becoming apparent to many that there is too little machinery on several lines of summer goods, particularly on men's balbriggans at $1.90 to $3.75.

Indications are now, that there will also be a scarcity of boy's balbriggans for 1907. There has been a shortage of these during the past season and this is being augmented by the Ford Mfg. Co. announcing their intention not to make them for another season. The Perry Knitting Co. and the Lawrence Mfg. Co.'s lines of boys' balbriggans have been sold up for the season for some time past.

West Brothers of Syracuse have discontinued making their line of men's light weight ribbed goods and state they have all the orders necessary to run their machinery on a line of eight pound ribbed goods for men at $3.50 and a line of boys' ribbed shirts and drawers at $1.90. They state that owing to a scarcity of boys' balbriggans, they have been able to book a large business on boys' ribbed goods.

The Avalon Knitwear Co. have been out soliciting business on their new line of men's summer weight combination suits and it is understood that a very large business has been booked on a white lisle garment with blue striped mercerized collarette neck that gets to the retail for $1.00 a garment.

It is noticeable that in all lines of men's combination suits, buyers are having a great many made sleeveless and knee length. It has been customary to look upon garments of this character as only for the use of the athlete, but now the trade in general are apparently discovering that this makes a comfortable garment for men in any walk of life.

Several manufacturers are also showing men's ribbed shirts made without sleeves or buttons that get to the retailer for 25c. and 50c. garments and on these lines, salesmen report a very satisfactory business.

For some time during the past season it has been very difficult to get men's nainsook underwear and as a consequence, both Wise Brothers and Erlanger Brothers, who are large makers of this class of goods, have increased their production considerably on these lines. Wise Brothers are showing nainsook sleeveless shirts as low as $2.50 made with three button opening and also made coat shape at $3.12 1/2. They also show knee length drawers at $3.00 and it is understood that some very large orders have been placed on these lines.

The Wright's Health Underwear Co. have added to their line a range of men's light weight ribbed goods made on spring needle machines and report a very satisfactory business. They show these at $6.00, $7.50 and $11.50 in Egyptian, blue, white and novi.

E. M. Townsend & Co. report an advance

of 12 1/2c. to 25c. per dozen on their entire line of Lawrence goods and take orders only for delivery in June or later.

In ladies' ribbed goods for spring delivery, a number of manufacturers have withdrawn their lines from sale, among which are Eureka Knitting Co., Amazon Knitting Co., J. F. Bast, Lewis Jones Knitting Co., and J. C. Roulette & Sons. It is also reported that the Hazle Knitting Co. have sold up their production of shaped ribbed vests and pants at $1.80 for ordinary and $1.90 for extra sizes, and are now engaged in building a new mill to take care of their increased orders.

Fall duplicating has been fairly good during the past month, wherever goods might be had. Satisfactory delivery dates are hard to get and many buyers have had to be content to place orders for November delivery.

Men's ribbed and fleeced goods are particularly scarce. The scarcity of men's ribbed goods is due in some measure to the fact that the J. H. Murphy Co. will probably be unable to fill their orders.

The price of ladies' carded yarn ribbed goods have advanced 5 cents per dozen and there is as yet no indication of any recession of position taken by manufacturers of these goods. The price of combed yarn goods has not been advanced any, but is well conditioned in regard to orders.

Manufacturers throughout New York State are complaining again, regarding the labor difficulty and state it is a very difficult matter to get help enough to keep the full complement of machines running, when there are so many opportunities for the girls to take positions in summer hotels at seaside resorts, etc.

Wool underwear of all kinds is well sold up, particularly scarlets and high colors and owing to the scarcity of stock, manufacturers of these goods are now asking advances of 2 1/2 to 5 per cent. over the early prices.

HOSIERY

The hosiery market presents a mid-summer holiday appearance. A few buyers are still in the market, but their actual purchases at just this time are of small volume. They are here to look up deliveries on fall goods and to detail their purchases of spring goods made earlier. A considerable amount of fall business could be taken if the manufacturers could give buyers any assurance of early delivery, but in nearly all instances, this cannot be done.

One of the lines of hosiery that might be called slow at the present time is children's low grade ribbed goods. This is not due so much to an over production as to the fact that the public are buying better goods than formerly. It is a fact that mills making ribbed goods at $1.00 and upwards have plenty of orders, while those making them at 60c. and 65c. are open for business.

So great has been the business placed on fine gauged and full fashioned ladies' hose that these lines are practically out of the market.

Buyers have found it impossible to get all the lace goods they require from Germany this year and consequently, have about cleaned up the domestic market on lace lines.

It is noticed that this season, buyers are leaving details for considerable portion of their orders open for later instructions; the reason given for this is that they wish to watch the trend of dress goods colors and fix up their orders accordingly. So far indications are that colored fabrics in plain and fancy effects will be much used, which will give a wide scope to a range of fancy hosiery.

There will probably be a good demand for light shades in fine gauges and for self embroidered goods, rather than contrasting colors. Laces are not looked upon quite as favorably as last year and advices from Chemnitz would indicate that probably in the month of January next, it will not be a difficult matter to get lace goods in that market.

Small self colored figures in embroidered half hose promise to be good, as well as very fine stripes and small checks. Navy and cadet blue will be in fair demand and tan for women as well as men will probably be in better demand than for some time.

DEPRECIATION OF MACHINERY IN A KNITTING MILL.

BY CYRUS TIMMERMAN.

The depreciation of machinery in a knitting mill and the percentage that should be allowed annually depend a good deal on the class of machinery, on the employes whose work it is to keep the different machines in repair and working order, and also on the ideas and views of the proprietors of the mills. Certain classes of machines depreciate in value more rapidly than others owing to the radical improvements being made on them from time to time, which render the older machines absolutely worthless. Again the value of other machines in which only slight improvements are made can be maintained unimpaired by adding these improvements.

In the last twenty-five years hosiery machines have depreciated in value more rapidly than other classes of knitting machinery owing to the rapid and radical improvements. Twenty years ago we had what was called the hand stocking machine that was considered remarkable in its line. It was operated entirely by hand power. The first improvement on these was to add machine power for knitting the leg part of the stocking. This improvement caused the first machines to be practically worthless as they could not be adapted to power. A new machine had to be built and whereas it required an operator to each hand machine one girl could attend to two or three power machines. Improvements have been made very rapidly from the old hand machine to the 1/2, 3/4, 7/8, 15/16, and finally to the full automatic machine of today. These are operated entirely by machine power and require only a slight supervision and to be kept supplied with yarn.

Each stage in the development has been marked by sudden depreciation in the value of the older machines. Even now that these machines have reached the full automatic stage, improvements are still going on so as to make them more durable, or less liable to get out of order, or to save wear and tear on the needles. On this class of machines a manufacturer should deduct at least ten per cent. annually so as to wipe out the cost in ten years.

Spring needle knitting machines depreciate very little. While there have been quite a number of improvements on this class of machines in the last twenty years, still they have been in the nature of improved parts, and the construction is such that an old part could be removed and the new improved part put in its place. A manufacturer who has kept abreast of the times and purchased these improved parts from time to time, and replaced with new parts those which wear, has today practically up-to-date machines, which are just as good for manufacturing purposes as a bran new machine made at the present time.

I have known spring needle machines, twenty years old, which had been kept in thorough repair and condition, to be sold for 75 per cent. of the original cost.

Manufacturers who have this class of machines and who see that they are kept in good condition, will not need to allow more than 3 per cent. annually for depreciation. All new or improved parts that have replaced others are charged to "repairs" account, which is quite proper, as the new improved parts do not add to the cost value of the machine, only so far as they prevent the value depreciating.

Certain makes of sewing machines are another class of machine that do not depreciate very rapidly provided new parts are constantly procured to replace the worn out parts.

There are some manufacturers, however, who boast of their repair account being small, because when a part breaks or is worn considerably, instead of buying a new part, the fixer is told to patch it up so it will run, which he does, with the result that in a few years the machine is of no value except to be thrown out for old iron. It is false economy to patch up a broken part of a machine. Fixers often remark, "Well, I patched up that all right and it is stronger than before." Yes, no doubt that is true, but I have found from experience in the running of machines this way, that the fixed up part, which is now stronger, will cause the breaking of another part, which would not

have broken had a new part been put in instead of patching up the broken one.

This principle applies to nearly all kinds of machinery, and it may be stated generally that it does not pay to patch the machine, but that it is cheaper and better in the end to replace all broken and worn out parts with new ones and in this way keep up the condition and value of the machine. Take sewing machines as a whole, I think five per cent. annually is sufficient to cover depreciation.

Cop winders depreciate very little as there have not been any radical improvements in them. The chain parts and the shaft boxes are the parts that wear out first and these are easily replaced with new. Then the spindle sockets and bearings are other parts that wear, causing the spindles to run untrue. Still good bobbins can be wound, even when these are considerably worn with long use, so that five per cent. annually would be ample to allow for the depreciation of this class.

Washing machinery depreciates rapidly from the rotting of the wood as well as from greatly improved labor saving machines that are being brought out from time to time, so that for this class not less than ten per cent. should be allowed annually.

Generally speaking, therefore, the depreciation of machinery depends upon whether the machines have been rapidly improved or not and also whether they have been continually kept in good repair and in good working condition.

THE TEXTILE TRADE OF EUROPE.

New York, July 25, 1906.

Editor Textile World Record:

My recent trip abroad gave me an opportunity to look into the conditions of the knitting trade in Europe and make a comparison between foreign and American methods. It is incontrovertible that this special branch of the textile industry has still its headquarters in Europe, that the centuries of development and perfecting, the long training of generations working on the same lines cannot at present be overcome by the energy and enterprise characteristic of Americans. It is true that there is no rapid change to be seen in the European manufacturing centres, though progress is going on slowly but surely, avoiding radical changes and permitting everybody to follow or step out of the battlefield without serious loss. If the individual and independent home worker in the knit goods line has not yet entirely disappeared and is still able to make a living (mostly with long working hours and the assistance of the other members of his family) the factory system is making good headway without the objectionable accompaniment called the sweat-shop.

Generally speaking I found nearly all manufacturing centres in the knitting line fairly busy. The market conditions in raw material, especially wool, in many cases reduce the annual profit to a very low point, but very few machines are idle if they are up to date and in working condition. Germany especially is enjoying good business and good returns. The domestic markets there are absorbing more goods than at any previous period. All industrial enterprises are kept working and no idle hands are to be found. Wages as a rule have been advanced considerably in all industries and the working classes can afford to dress better and spend more money.

The export trade for 1905-1906 is larger than in previous years and the statistical returns when published will prove that the knit goods industry had its full share in the increase. It was at first supposed that the new tariff would bring slack time as large quantities of goods were imported before the new rates were applicable, but events seem to disprove this supposition.

The various manufacturing centres in Germany are still holding out for the specialties that have been developed in those districts. Chemnitz is and always will be prominent in the hosiery and glove line, Apolda in fancy articles and Stuttgart in underwear.

HOSIERY.

Looking closely into the different branches of the knit goods business it will be found that hosiery had a very good sea-

son, especially in all full fashioned lines, from the plain and cheap goods to the most expensive and richest lace hose and hand embroidered articles. Every available dozen had to be shipped, all machines were working full force and a large percentage of export orders remained unfilled, partly on account of low prices and partly because the goods could not be turned out.

GLOVES.

The craze for long gloves continues unabated. Such conditions never existed before. Every available machine is pressed into service. Extra help is employed. Every possible imitation is made and even then it is not possible to satisfy buyers. Ordered or not ordered, goods cannot be delivered. I found American buyers on the spot snatching every dozen as it comes from the last hand in the mill and paying advances from 40 to 100 per cent. Machine manufacturers are helpless. Do what they can they cannot build enough machines and twelve to eighteen months are frequently asked for the delivery of goods.

Attractive novelties have been made in ladies' gloves and long mitts, especially in the lace line. The heavier weight fancy gloves had a regular sale, but on account of the pressing need of help in other lines bringing more money the Ringwood goods are rather neglected and deliveries will be irregular.

UNDERWEAR.

Even with all the machines at work there is a considerable shortage in the finer grades in fancy, full fashioned and cut underwear. The jersey goods especially found more appreciation in the sporting line and are in great demand.

SWEATERS AND BLOUSES.

These goods have suffered a certain setback, especially in the cheap and heavy grades. The better quality with good finish stands first along with the cardigan jacket. Sporting goods in fancy knit show especially interesting creations for automobilists and outdoor sports. Infants' goods in cotton, mercerized and silk enjoy a better sale notwithstanding the increased production of the new automatic machinery. Shawls, fascinators, hoods and fichus show a good trade, a large increase in all lines and a profitable business. It may be said here that the other European countries also take part in the good trade conditions and most of the mills report being very busy.

FRANCE.

There has been an especially good season at Troyes where all the finer hosiery and large quantities of light weight underwear are made for export. The export trade was more satisfactory than the domestic market owing to unsettled labor conditions at home.

SWITZERLAND.

Switzerland is enjoying the best export season on record in fine silk underwear, especially ladies' goods. America is one of the best markets even in circular ribbed goods, strange as this may seem. The finish and regular yarn place these products far above the average American articles.

ITALY.

Italy seems to have captured a great part of the Oriental markets all along the Mediterranean coast. Underwear and hosiery are the leaders and some fancy silk shawls fill the American markets.

SPAIN.

Spain has increased the production of cotton goods and finds a ready market for the cheaper class of goods in hosiery and underwear in the Latin republics.

AUSTRIA.

Austria seems to be getting but a small share of the present prosperity in textile manufacturing, with the exception of a few specialties made in Vienna and sent to the States.

ENGLAND.

England is fairly busy on her special lines, but far from enjoying such a profitable trade as her German competitors.

AMERICA BEATEN BY EUROPE.

Why cannot American manufacturers compete successfully with the German manufacturers of fancy knit goods? This question has been repeated very often, espe-

cially by manufacturers and dealers in the heavier woolen knit goods made on flat machines. Analyzing the conditions, we come to a few conclusions that give some light on this question.

The fancy knit goods industry was originally developed in various German and English districts and has been maintained there for decades and centuries. Generations have grown up in the business. The son learned his trade from his father, and if the manufacturing system is not always up to date the knowledge of the article is there, the taste is formed, the workman is familiar with his machine, the girl is trained in the finishing department, and last but not least, the spinner has been educated to make the yarn as required. The old German system with the small independent shops where a boss knitter had a few machines operated by some assistant, developed artistic taste and competition in novelties. If the boss wanted to be busy and get good pay all the year round he had to put up some good samples that were submitted to the large traders. New patterns, new shapes and new styles were designed and from these the best things were selected. Although the manufacturing system has been changed in the last few years and regular factories with up-to-date machinery and technical management are making the goods, the ingenious knitter is not yet dead; he is still at work seeking for something new of his own accord or at the suggestion of the proprietor of the mill.

To produce a good line of fancy goods a wide market is essential with customers in different zones with different seasons. A freetrader will have a great advantage with little or no duty on raw material and cheap as well as trained help. The German manufacturer of fancy knit goods has most of these points in his favor. He has the machines and the skilled operatives who know how to run them. He has his spinner and dyer at hand to prepare even small lots if necessary. He has cheap material and good yarn in any size and shade. His help is cheap, understands the finishing of the goods and will save him most of the seconds.

Compare these conditions with those of the American manufacturer. He has to get his machines from Germany or England, paying 45 per cent. duty. The help have to be imported also if he is to get results from his machines. He has to use the yarn the spinner prefers to supply, or buy large assortments abroad. The price of his raw material is raised about 37 1/2 cents per pound and 40 per cent. ad valorem. He has to contend with larger wages, a smaller output, a large percentage of seconds and increased running expenses. He has only a limited market as he cannot sell outside. By figuring this all up and comparing the cost of the American goods with that of the imported article the reason why the American knitter cannot compete with his foreign rival is manifest.

To be sure the manufacturing systems differ in the two continents, but lately most of the work in the European knitting line has been done in regular factories, plants employing from 40 to 2,000 hands. Home work in Germany is rapidly decreasing and at the same time the efforts of the individual workers are concentrated and made more efficient. The earning capacity of the average workman in Europe has been raised in the last three years about thirty per cent. and girls are also better paid. Child labor was restricted long ago, and even small shops are under factory laws and restrictions. Hand operations are eliminated wherever automatic machinery will do the same work. The progress in this line is considerable and all factories are kept busy on new and expensive machinery of this kind.

MAX NYDEGGER.

RACK STITCH RIB KNITTING MACHINES.

An improved knitting machine for rack stitch rib work has recently been perfected and patented by Stafford & Holt, Little Falls, New York. The improvement is in the method of shifting the needles in such a way that the fabric may be changed at will. This is done automatically by a suitable pattern mechanism. The construction has the advantage of leaving the needles largely exposed without being held throughout in grooves, so as to be easily cleaned,

and it also gives the minimum of friction on the needles. While certain parts of the needle-dial are changed the other members are left free to be operated as desired.

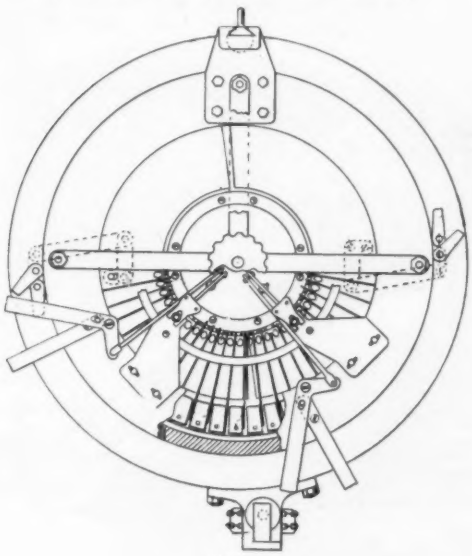


FIG. 1.

division of the dial-plate into annular parts having no advantage, but being necessary to allow the insertion of the racking-guides. These guides, however, provide for racking the needles in one direction only. In this improved machine the parts of the dial-plate for racking the needles are brought into service, using a construction which permits the needles to be racked in either direction. The needles can be racked a greater or less distance, as may be desired.

Any of the needle-racking sections may be moved as the feeds give the yarn to the needles to be racked. A machine is shown in the illustrations in which each section of the dial-needles may be racked when no work is done by those needles (the yarn-feeds and the operating-cams being over a different section), in readiness for the coming of the feeds and cams in the revolution of the cam-plate and its supported parts. By this construction a garment may have the rack-stitch throughout or only in certain parts.

Fig. 1 is a plan of the improved machine; Fig. 2, a side view showing the cylinder

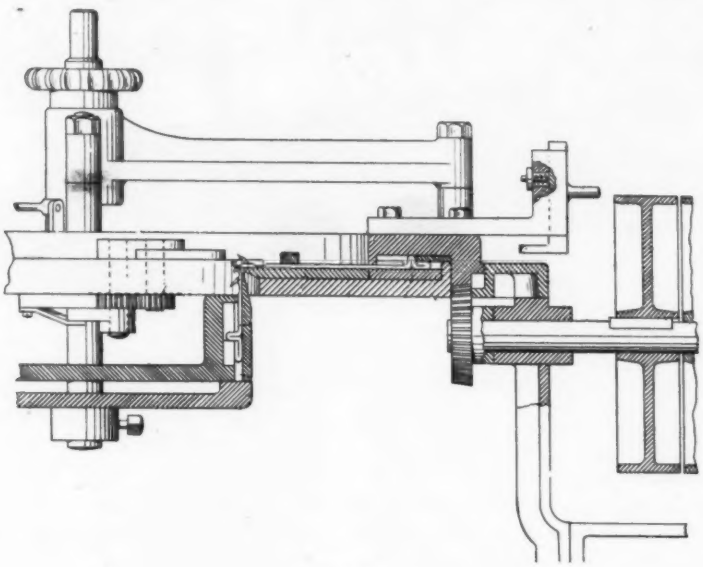


FIG. 2.

The inventors state that some machines have the dial-plate with racking-guides, the shaft, cylinder bed and dial plates, cam ring and other parts.

KNITTED CLOTH FOR GLOVES.

Editor Textile World Record:

Enclosed is a sample of a very good grade of glove fabric in the gray, and I am informed that this cloth, although it has a warp, is made on a knitting machine. I believe this machinery is imported and inasmuch as there is at present a great demand for the goods, any further information you can give us regarding the process of manufacture will be greatly appreciated. Middleville (721).

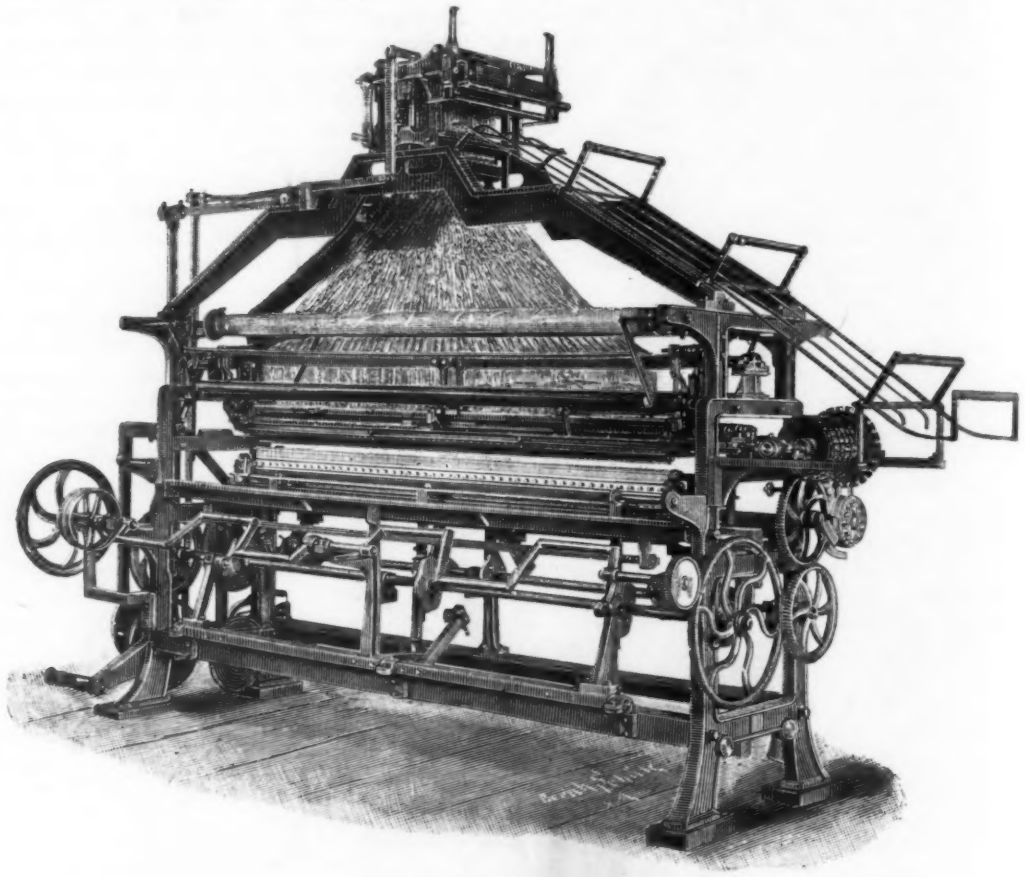


FIG. 1.

The enclosed sample is a warp knitted fabric and is made on the machine shown in the accompanying illustration, Fig. 1, for which the Grosser Knitting Machine Co., 260 West Broadway, New York, are the American agents. This machine is fitted with a jacquard head for the production of fancy effects, like that shown in Fig. 2. The machine is of the straight needle bar style and has spring bearded needles. It knits a glove on the same principle as that employed for the ordinary warp knitting machine. The silk threads are drawn from spools, passing through guides to the needles. A leaded wire falls between each guide needle. Whenever the jacquard card acts upon the guide needle the corresponding thread is looped around the next spring bearded needle to the right or left and the bar needle in front remains out of action, producing an opening in the fabric. The jacquard motion will group these openings to produce any desired effect.

The machine is built with a 65-inch needle bar. A gauge of 26 to 28 needles per inch is said to give the best results in the manufacture of glove fabrics. The daily (ten

hour) production of this machine is ten to thirteen yards of 60-inch goods, one operator attending to four machines. The fabric produced can be cut in any desired form without danger of raveling. The cloth is suitable for fancy as well as plain gloves and mittens, for which there is at present a great demand. It can also be used in the production of scarfs, shawls, sashes, bonnets, fringes and figured plush.

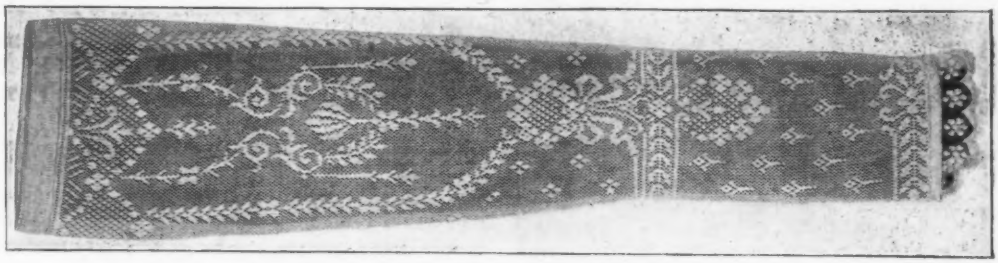


FIG. 2.

Pressing Cotton Hosiery.

Editor Textile World Record:

What is the best method to press cotton hosiery made of a high grade of yarn in order to obtain the most desirable results, and not to give the goods the cheap looking glossy finish?

Mackenzie (701).

We have maintained a high reputation for our goods for many years and the process of finishing is as follows: As the stockings come in batches from the extractor they are partially dried in the rotary dryer and then packed in boxes and left for twenty-four hours. They are next boarded and left off the boards until thoroughly dry. After inspection they are placed in the press boards and subjected to a pressure of ninety tons for one hour with forty pounds of steam. The cold water is then turned on for one hour, after which the goods are taken out. It is better to let them lie awhile before folding. Among the reasons for adopting this particular process are the following: A stocking dried partially and kept damp for awhile will feel softer than one that is boarded wet. A stocking that is not perfectly dry when going into the press will acquire the gloss to which Mackenzie objects. The heat and pressure to which our goods are subjected give them a glossy appearance, but it is removed by the cold water. Milton.

iery, therefore it is necessary to consider the whole process of finishing as well as that of dyeing. Every step must be taken with care as on it depends the success or failure of the finished product. No superfluous matter should remain in the goods after they are washed; they must have the desirable feel so necessary to well finished goods before leaving the dyehouse. Blacks must be rid of the brown shade that so often causes trouble and that could be eliminated if the dyer only knew where to look for it and how to apply the remedy. From the dyehouse the goods go to the boarding room where they are spread out for a short time on a frame with a galvanized wire covering and fan attachment, and dried preparatory to boarding. If not to be boarded immediately they should be placed in a cool room and not allowed to remain in the hot boarding room exposed to the light and heat. After boarding they are placed in a dryer of the cyclone type or hot press. I prefer the former as there is less liability to damage from rust, or to starting oxidation, either of which would make trouble for the dyer. The boarding should be done with care. Fashioned hosiery should be given to a man experienced in that line of work. The courses must run straight across the stocking and not in a semi-circle.

The next processes are inspecting, mending and pressing. I have obtained good results by using an ordinary steam press to heat the card boards, which must not be too hard. If they are made from hard pressed paper the goods are likely to suffer from an objectionable gloss. They are next placed between the boards, one half to one dozen at a time, and passed between rollers, say 30 inches in circumference, covered with rubber, so as not to press the welts more than any other part. These rollers make about eight revolutions per minute. They are then allowed to stand for a short time to settle and cool. This is a simple method and the capacity can be made to suit the requirements. Henry Nevis.

Knit Goods Stained in the Press.

Editor Textile World Record:

Enclosed are two pieces of knit goods bleached white. One piece was put through a hydraulic press between press papers, and on taking it out the goods had turned yellow. The other piece was not put in the hydraulic press and it has retained its whiteness. We have tried it with soap and without soap, and also with the soap washed out after bleaching, but all gave the yellow effect after being put through the press. For some reason or other the heat on the bleached goods turns them yellow and I would like to know the why and wherefore. Wolcott (706).

A change in the shade of knit goods during pressing is a trouble that has bothered finishers ever since hydraulic presses have been used. In trying to locate the cause the first question to be considered is whether the goods that turned yellow had been scoured as thoroughly as those that remained unchanged. One of the principal causes of bleached goods turning yellow is insufficient boiling before bleaching. No half way measures will do. This should be impressed on the bleacher every day and every hour in the day. It should be whispered and shouted to him every time the finisher sees him.

A good olive oil soap should be used and the goods should be washed thoroughly. After placing in the press the heat and pressure are turned on and after a short time the goods are removed. If they are yellow, dampen a sample with hot water. If it smells of soap it is evident that it is the soap that has made it yellow. Then I would recommend that a set of the goods be finished without the soap and pressed as before. Then if the yellow effect is still there it is evident that something besides the soap is at fault.

The yellow shade may be caused by the heat of the press. The finisher can readily test this by pressing the goods at different temperatures and pressures and leaving them in the press for different periods of time. Too much heat will scorch the goods and turn them yellow. Again the press papers may be responsible for the yellow stain.

Sometimes the papers absorb coloring matter from colored goods, such as tans. The finisher can easily determine by a few simple tests whether the press papers are at fault. Place between the press boards and the goods two or three thicknesses of clean white paper and note whether the cloth still comes out yellow. If so, then the press boards are evidently not to blame. If the stain is caused by soap the remedy is found in more thorough rinsing. If caused by heat a cooler press should be used. If the press boards are at fault, throw them away and try a new lot. Wolcott should remember, however, that Johnny-on-the-spot can see more than the Johnny-not-on-the-spot. In other words, the causes of this and the many other difficulties that arise in a mill can be determined best by the man who is in charge of the work and knows all the conditions under which it is done. Harper.

I believe the discoloration is caused by the heat of the press decomposing the bleaching lime left in the goods. I have had the same trouble develop in goods on forms. To remedy it we reduced the temperature of the press so that the heat would not affect the chemicals in the goods. It was then necessary to leave the goods for a longer time in the press in order to get the desired finish. Before doing this we had for a long time blamed the bleacher and had changed bleachers two or three times, but without overcoming the difficulty. We then came to the conclusion it was the press and after pressing at a lower temperature we had no further trouble with the discoloration.

Alfred Gould.

The National Association of Hosiery Manufacturers.

This organization has recently issued a circular giving a list of its officers and members as follows:

OFFICERS.

President, F. L. Chipman, Easton, Pa.
First Vice-President, P. C. Withers, Mt. Vernon, Ill.
Second Vice-President, Isaac Mossop, Wiconisco, Pa.
Secretary-Treasurer, C. B. Carter, Philadelphia.
Executive Committee:
J. H. McPhail, Nashville, Tenn.
M. S. Gabriel, Allentown, Pa.
Garnett Andrews, Chattanooga, Tenn.
Fred W. Simons, Philadelphia, Pa.

MEMBERS.

ALABAMA.

Jefferson Hosiery Mills, North Birmingham.
Rosenau Hosiery Mills, Tuscaloosa.
Talladega Hosiery Mills, Talladega.

CONNECTICUT.

Winsted Hosiery Co., Winsted.

GEORGIA.

Climax Hosiery Mills, Athens.
Richmond Hosiery Mills, Rossville.
Rome Hosiery Mills, Rome.
Union Manufacturing Co., Union Point.

ILLINOIS.

Royal Knitting Co., Mount Vernon.

INDIANA.

Wayne Knitting Mills, Fort Wayne.

LOUISIANA.

Alden Mills, New Orleans.

MARYLAND.

Blue Ridge Knitting Co., Hagerstown.
Union Manufacturing Co., Frederick.
Windsor Knitting Mills, Hagerstown.

MASSACHUSETTS.

Lowell Hosiery Co., Lowell.
Shaw Stocking Co., Lowell.

MICHIGAN.

World's Star Knitting Co., Bay City.

NEW HAMPSHIRE.

Sulloway Mills, Franklin Falls.

NEW JERSEY.

David Cottrell, Hammonton.

NORTH CAROLINA.

Durham Hosiery Mills, Durham.
Tryon Hosiery Co., Tryon.
Wiscassett Mills Co., Albemarle.

OHIO.

Fay Stocking Co., Elyria.

PENNSYLVANIA.

Barger, Baines & Munn, Philadelphia.
John Blood & Co., Philadelphia.
T. W. Buck Hosiery Co., Philadelphia.
Chambersburg Hosiery Co., Chambersburg.
Chas. Chipman's Sons, Easton.
Doylestown Hosiery Mills, Doylestown.
J. W. Durbin & Son, Williamstown.
W. Godey Ellis Co., Philadelphia.
Fischer & Jones, Lykens.
Henry Gabriel's Sons, Allentown.
W. A. Hetrick & Bro., Philadelphia.
Hawk Knitting Co., Reading.
Hygienic Fleeced Underwear Co., Philadelphia.
Lee Hosiery Mills, Philadelphia.
Lykens Knitting & Mfg. Co., Lykens.
Maderia & Wanner, Fleetwood.
Melbourne Knitting Mills, Philadelphia.
Manheim Hosiery Mills, Manheim.
Miller & Sons, Philadelphia.
Isaac Mossop & Co., Wiconisco.
New Cumberland Knitting Co., New Cumberland.
Newville Knitting Co., Newville.
H. A. Romberger, Philadelphia.
Searles Knitting Co., Pottstown.
Simons & Struve Hosiery Co., Frankford.
Slatington Knitting Co., Slatington.
Steelton Hosiery Mills, Steelton.
Wm. B. Threapleton's Sons, Philadelphia.
Unrivaled Hosiery Mills, Williamstown.
West Branch Knitting Co., Milton.
Wyomissing Hosiery Co., Mohn's Store.

TENNESSEE.

Davis Hosiery Mills, Chattanooga.
Holston Mfg. Co., Lenoir City.
Knoxville Knitting Mills Co., Knoxville.
Nashville Hosiery Mills Co., Nashville.
Sweetwater Hosiery Mills, Sweetwater.
Wood Knitting Co., Morristown.

VIRGINIA.

Danville Knitting Mills, Danville.
Lynchburg Hosiery Mills, Lynchburg.
Parker Hosiery Mill & Dye Works, Portsmouth.

WISCONSIN.

Madison Knitting Co., Madison.

Knitting Machinery for Quick Delivery.

An unusual opportunity is offered to knit goods manufacturers to procure a wide range of machinery for quick delivery and at all available prices.

The entire plant of the American Knit Goods Mfg. Co., of Brooklyn, is offered for sale, in lots to suit purchasers, by Jas. Taylor, 835 Arch St., Philadelphia, to whom all correspondence should be addressed and of whom catalogues may be had on application.

This was a very extensive plant and thoroughly equipped for the manufacture of ladies' and men's ribbed underwear, sweaters, blouses, athletic goods, bathing suits, and full-fashioned and fancy knit goods.

The Steber Machine Company's New Location.

The Steber Machine Co. of Utica, N. Y., which was recently incorporated for the manufacture of the knitting machinery invented by Bernard T. Steber, is making very substantial progress, and they are now very comfortably and conveniently located in their new shops, corner of First and Blandina Sts., Utica, N. Y. They occupy the two floors, 35 by 90, with quite a good-sized L adjoining and are so situated that they can add additional space when needed. The rooms are well lighted, ventilated and heated, and we congratulate the company on their fine location.

The shops are equipped with the latest and most improved tools, which is a guarantee of the good workmanship they claim for their product. On the ground floor they have a very comfortable general office in addition to the private rooms of the president, general manager and sales agent. A visit of our representative found them very busy installing their new machinery and he learned that they have a number of substantial orders already on their books. The officers of the new company are as follows: Bernard T. Steber, president and general manager; Jacob Agne, treasurer; Wm. A. Ainsworth, sales agent.

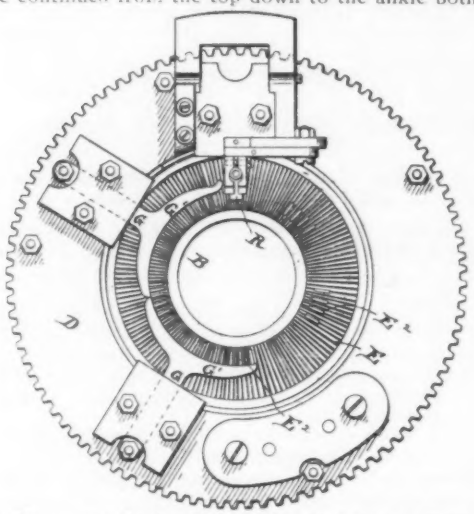
The company will be very glad to send full particulars regarding their different machines, or a sample of their product.

Recent Knitting Patents.

KNITTING MACHINE. 824,403. Moritz Boas, St. Hyacinthe, Canada.

KNITTING MACHINE. 824,043. John P. Sheppard, George B. Sheppard and Arthur H. Mankin, Salem, N. J.

This invention has for its object the manufacture of lace stockings in which the lacework may be continued from the top down to the ankle both



at front and back. While this has been accomplished upon special machines of complicated structure for the manufacture of ladies' or large sizes of stockings, this invention secures the same results by small additions to a well-known type of knitting-machine heretofore adapted to knit all sizes of stockings, except the very small sizes and with lacework down the front only. By the addition of these improvements this class of machine is given greater capacity than the more complicated machines referred to above.

KNITTING MACHINE. Circular. 824,759. Harry I. Thrall, Little Falls, N. Y., assignor to Homer P. Snyder Mfg. Co., Little Falls, N. Y.

KNITTING MACHINE Latch Closer. 825,679. Henry Pulster, Philadelphia, Pa.

KNITTING MACHINE NEEDLE. 825,017. William T. Barratt, Bennington, Vt., assignor to Charles Cooper, Bennington, Vt.

KNITTING MILL NEWS.

New Mills.

*New Hampshire, Keene. The Keene Construction Company has been reported incorporated with capital stock of $14,500 for purpose of building a new mill for the Monadnock Hosiery Company, recently organized to erect a new plant.

New Jersey, New Brunswick. The Interwoven Knitting Company, with a capital of $125,000, which was incorporated recently, is now in operation, running 60 knitters on men's and women's hosiery. John W. Meddler is the secretary and manager. They sell direct.

New Jersey, Riverton. The Argood Hosiery Co., which was incorporated under the Delaware laws with a capital of $25,000, commenced its operations at 1034 Washington Ave., Philadelphia, is now located at East Riverton, where they are manufacturing women's and children's fine plain and fancy hosiery on 21 knitters, the plant being run by gas. The officers of the company are: C. Sylvester, president and treasurer and J. H. LeConey, formerly located at Taubel's Mill, Riverside, N. J., vice president and manager. They have large numbers of orders on hand and are working full time. The production is sold direct.

*New York, Broadalbin. The first story of the new Broadalbin Knitting Mill is completed and the workmen are now engaged in putting up the dyehouse and other buildings in the rear, which are being constructed of concrete. The work on the main buildings have been stopped owing to the delay in the arrival of the heavy pine timber.

New York, Saratoga. The Saratoga Textile Company has been organized with capital stock of $1,000,000 and will operate plant at this place. Although Mr. J. H. Clark will be manager of both plants they will be operated independently. The Clark Textile Company will retain their mills at Sidney and this place.

*Ohio, Cleveland. The Federal Knitting Mills Co. at 600-610 Huron Road, is making fancy knit goods, shawls, hoods, toques, shirts, fascinators, infants. sacques, novelties. Harry B. Richman is president of the company; Louis H. Hays, vice-president, and Herbert G. Goldberger secretary.

Pennsylvania, Bristol. The Radcliffe Hosiery Mill has been started at this place recently.

Pennsylvania, Harrisburg. A new building is to be erected for the Wellknit Hosiery Co., a new concern which will employ about 40 people. The new building will be 33 by 55 feet, two stories, brick.

*Tennessee, Johnson City. The new plant of the Watauga Hosiery Mills will be put in operation August 1st, making misses' fine ribbed hosiery, using 20s to 40s yarns. The capital stock is placed at $10,000. L. Whitney Wood is president of the company; L. P. Wood, treasurer and superintendent. They will start with equipment of 20 knitting machines, using electricity. Have not yet made arrangements regarding selling of product, but expect to sell direct.

Enlargements and Improvements.

*California, Berkeley. The J. J. Pfister Knitting Co. has started work on rebuilding their plant, formerly located at Geary St., San Francisco. They expect to have same completed about Oct. 1st, with equipment of 52 knitting and 30 sewing machines for making underwear, bathing suits, jerseys, sweaters, etc.

Connecticut, New Haven. The Columbia Hosiery Company have leased a large four-story building and will remove to same as soon as alterations

have been completed. They propose adding manufacture of underwear to their hosiery line.

*Delaware, Wilmington. A new mill, 114 by 60 feet, 3 stories, is to be built by the Delaware Hosiery Mfg. Co.

*Georgia, Columbus. The Perkins Hosiery Mills will install the new machinery in the plant as soon as it is received. The capital stock has recently been increased for providing for the new addition.

*Massachusetts, Lowell. Contract has been awarded Chas. P. Conant for building the Shaw Stocking Company's new mill. This building will be 245 by 118 feet.

Michigan, Vassar. The Vassar Knitting Mills have purchased additional machinery for making hosiery and underwear.

*Michigan, Ypsilanti. The Ypsilanti Underwear Company is removing the machinery from the branch mill at Ann Arbor to this place.

Mississippi, Columbus. The Columbus Underwear Company proposes making extensive improvements to the plant. They contemplate building a cotton yarn mill and equip same with 5,000 spindles will also install plant for dyeing in the roll.

*New York, Amsterdam. Work will start in the middle of July on erection of new mill for the Blood Knitting Company. This building will be 178 by 42 feet, four stories and basement.

New York, Elmira. The Campbell Knitting Mills Company is to install machinery for manufacturing part of the yarn used. Contract has been placed with the Howard & Bullough American Machine Co. for the equipment.

*New York, Elmira. The Campbell Knitting Mill Co. will use the building formerly occupied by the Call Manufacturing Co. for the finishing of their knit goods and spinning of cotton yarn used in the knitting plant. They will operate 1,836 ring spindles, making 9 to 16 yarn. Will also add 50 sewing machines. Howard & Bullough Am. Machine Co. supply the spinning mill equipment.

New York, Hagaman. An addition, 80 by 32 feet, three stories, is to be built to the Star Mill, L. E. Harrower, proprietor.

New York, Troy. The Wright's Health Underwear Co. has recently added 20 new knitting machines in the plant for making fine gauge fleeces.

New York, Troy. The Troy Knitting Company has started work on a large addition to the mill.

*North Carolina, High Point. The plant of the Centaur Knitting Company has been purchased by P. K. Green, of the Carolina Mills Co., Winston-Salem, N. C. The plant will be removed to the latter place.

North Carolina, Lexington. The Yadkin Knitting Mills are to add 30 additional knitting machines to the plant.

*Ontario, Dunnville. The Monarch Knitting Company will add one new set of cards in their plant. This mill is operated on woolen yarns, sweaters and ladies' golfas. A dye house is also attached to the plant.

Pennsylvania, Ashley. Additional machines are being installed in the Ashley Knitting Mill, Ambrose West, proprietor.

Pennsylvania, Philadelphia. The continually increasing business of the Thomas D. Weston Co., has compelled them to seek for larger quarters. The plant which was formerly located at 15th St. and Washington Ave., has been removed to 3735 Filbert St., where they are occupying the second floor of the two-story and basement building with an option of taking over the entire mill within a year. They are manufacturing high grade worsted golf gloves and have almost doubled the capacity of the plant and expect to make a still further increase within a month. T. D. Weston is the manager and buyer.

Pennsylvania, Philadelphia. Wallace Wilson's Derby Knitting Mills, formerly the Boyne Knitting Co., located at 11th St. and Washington Ave., have been removed to 1214 Crease St., occupying the third floor of the Thornton Mill.

Pennsylvania, Philadelphia. We have been advised by the Melbourne Knitting Mills that they are making no changes in the plant excepting the addition of 20, and not 50, machines as reported. Ernest J. Aucott is now superintendent of the plant.

Pennsylvania, Philadelphia. The Fassner Hosiery Company has removed the plant to 2411-13 North Howard St., where facilities for increasing plant are better.

Pennsylvania, Philadelphia. The Carlisle Hosiery Co., manufacturers of fine gauge seamless half hose of combed Egyptian yarn with 20 knitters, 3 ribbers and 3 loopers, report that their mill is sold up to April of 1907. The company have so many orders on hand that they are contemplating doubling the plant in order to get them out. The manager is Fred Merbitz, a member of the company, the production being sold direct through Wilfrid Grey at their city office at 38 North 9th St. The mill is located on Orchard St., below Unity, Frankford.

Pennsylvania, Philadelphia. M. Starrels, formerly located at 218 Arch St., where he manufactured Tams and toques on 25 knitters, has removed his plant to 2126 E. Dakota St., a three-story building which he recently purchased and where he is now manufacturing a line of bathing suits only. It is reported that in the fall it is his intention to put in machines for the manufacture of high grade sweaters. He sells direct.

*Pennsylvania, Pottsville. Work has been completed on addition to the bleachery at the Union Knitting Mills and machinery is being installed. Work has also been started on an addition, 45 by 40 feet, three stories, brick, in which additional knitting machinery will be put in.

Pennsylvania, Reading. The Nolde & Horst Company will erect an additional mill, 210 by 50 feet, with engine room and dye house 130 by 30 feet.

Pennsylvania, Reading. The Reading Underwear Company is reported as having purchased property along the Lebanon Valley road, upon which they will probably erect a large mill.

*Pennsylvania, Scranton. The Groat Knitting Mill, reported in a previous issue to erect new buildings for purpose of increasing capacity, will have an output of 2,000 doz. fleece underwear per day.

Pennsylvania, Shamokin. A five story addition is to be built to William F. Taubel's mill at this place. When completed 200 more people will be employed.

Pennsylvania, South Bethlehem. The Austin Knitting Company has placed order for 20 Standard machines to be installed in the plant, for making 200 needle white foot half hose.

Pennsylvania, York. A new factory is to be built by the Joseph Black Sons Company and bids are being received upon the proposed buildings.

Rhode Island, Pawtucket. The Lebanon Mills have recently added five fine-gauged machines for making flat goods.

South Carolina, Bowling Green. The Bowling Green Knitting Mills are to make additions to the machinery equipment and will also increase the power department.

Tennessee, Knoxville. It is reported that the Knoxville Knitting Mills Company proposes doubling the capacity of the plant.

Tennessee, Madisonville. The Madisonville Knitting Mills Company is to make extensive improvements to the plant. A new building will be erected, 100 by 50 feet, two stories, and additional machinery installed, increasing capacity of the plant to 1,000 dozen pairs of hose daily.

Wisconsin, Milwaukee. The Standard Knitting Company has recently purchased the Vorevaerts Turn Hall and will remodel same and equip with machinery, to be operated by them.

Pennsylvania, Philadelphia. W. F. Taft & Co., Proprietors of the Geneva Knitting Mills at Holmesburg, recently destroyed by fire, have taken space in the mill at the S. E. Cor. of Coral & Taylor Sts., which they are equipping with machinery for the manufacture of eiderdowns. The plant formerly run 24 knitters, selling direct

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Pennsylvania, Pennsburg. The Pennsburg Knitting Mills, 119 and 121 Fourth St., has been dismantled and the machinery sold to parties in Allentown. The plant was run on misses' and ladies' hose and men's half hose with 24 knitters.

Facts and Gossip.

Illinois, Chicago. Robert King, (82 Walnut Street) advises us that he is desirous of starting a knitting mill at this place and is getting necessary information, etc., on plant and equipment.

Illinois, Freeport. It is reported that the Rockford Mitten & Hosiery Company, Rockford, proposes establishing a branch factory at this place.

New Jersey, Burlington. The Burlington Hosiery Co., which was to commence its operations in this town and who contracted for their machines have cancelled the order, deciding not to enter into the knitting business.

*New York, St. Johnsville. It is reported that operations will soon be resumed in the St. Johnsville Knitting Mill.

*New York, Warsaw. It is reported that the Warsaw Knitting Mill has been sold to John Brown, Elmer Rowe and Edward Morris and that the plant will soon be put in operation.

North Carolina, Durham. The Real Estate & Trust Co. has been appointed temporary receiver of the Stone Hosiery Co., whose plant has been idle since March. It will be decided shortly whether or not the receivership shall be permanent, or dismissed.

Ohio, Cleveland. The Federal Knitting Company has been incorporated with capital stock of $50,000, by Paul L. Feiss, L. Seligman and M. K. Goldberg.

Pennsylvania, Hummelstown. Geo. P. Hoffer, one of the stockholders in the Hummelstown Knitting Mill Company, has purchased the entire plant.

Pennsylvania, Philadelphia. The new Dunwoody Hosiery Mills, 3731 Filbert St., West Philadelphia, report an active business. They are running both day and night, with two shifts, on fine women's hosiery.

Pennsylvania, Philadelphia. The Friedberger-Aaron Manufacturing Company, one of the largest and most prominent of the manufacturers of laces, braids and edgings in the country, announce that at the meeting of their Board of Directors on July 3d, they declared a dividend of five per cent. on their common stock.

Pennsylvania, Philadelphia. The Carvin Knitting Co., with a capital of $100,000, has been incorporated under the laws of the State of New Jersey. The incorporators are Jos. J. Carvin, Sr., Jos. J. Carvin, Jr., and Wilfred B. Wolcott. The company, which has been in existence for several years, is located at Jasper and Orleans Sts., in the Lomax Mill, where they are doing a successful business in turning out women's and misses' fine full fashioned and seamless hosiery, operating 160 spring and 88 latch needle knitters and 10 sewing machines.

*Vermont, Brattleboro. The Brattleboro Mfg. Co.'s fixtures, stock, machinery, etc., has been purchased by Chas. Miner, who contemplates operating the plant, provided satisfactory arrangements are made with the new Gas & Electric Co., which owns the building.

Virginia, Richmond. It is reported that Richard Hart, operating a glove manufacturing plant at Gloversville, N. Y., proposes establishing a plant at this place.

Personals.

C. H. May has accepted the position as superintendent of the Holston Mfg. Co. of Lenoir City, Tenn. Mr. May was superintendent of the Eden Park Mill for a number of years, and has been very successful as a manufacturer.

John McGovern, recently with the Alling Mills, of Derby, Conn., has taken a position with the Paragon Knitting Mills, Mohawk, N. Y. He is succeeded by J. E. Merrill, of the Wood Mills, Lakeport, N. H.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Yarn Dyeing Machine. L. H. A. Schwartz, Boston, Mass. A dyeing machine for yarn, which is described and illustrated in another part of this issue.

Warper Clock. The Draper Co., Hopedale, Mass., have recently improved a method of measuring warp yarn for making balls on balling machines. A description appears in another part of this issue.

Gassing Machine. The Woonsocket Machine & Press Co., Woonsocket, R. I. A gassing machine for cotton and silk yarn, described in another part of this issue.

Knit Goods Washing Machine. The Conklin Co., Chicago, Ill., has recently placed on the market an improved knit goods washing machine. The principal feature is an automatic reversing mechanism by which the cylinder is reversed at regular intervals, thus preventing the goods from becoming tangled.

Spool Stranding Machine. The Aiton Machine Company, 120 Liberty St., New York, are putting on the market a high speed twelve spool strander, that is designed to operate at 1,000 r. p. m., and is intended for use in the manufacture of hollow clothes line and other light stranding work, where high speed and large output are demanded. The first machine is going to the Malin Company of Cleveland, O., which, it is understood, have placed orders with the Aiton Machine Company for several more of these machines.

Licker-In for Woolen Cards. Howard Bros. Mfg. Co., Worcester, Mass., are placing on the market a patent licker-in, the invention of C. A. Cobbett. Some of the advantages claimed for this licker-in are that it will take the stock evenly, does not make bunches, is durable and when worn can be ground so as to be as good as new.

Cloth Counting Glass. Joseph Casartelli & Son, Manchester, England. A cloth counting glass by which the range is increased by mounting the glass on a carrier moved by a screw so that the observer can count the threads in any desired distance within the scope of the instrument. It is sold by Wm. Firth Co., 79 Milk St., Boston, Mass.

Spindle Oiler. Wilhelm Bauerle, Augsburg, Germany. A device for oiling the spindles of spinning, spooling and twisting machines.

Dryer for Raw Stock. H. Krantz, Aachen, Germany. An improved dryer for raw stock, which is claimed to be capable of greater production than has heretofore been possible.

Dyeing Machine. H. Krantz, Aachen, Germany. A machine for dyeing, washing and drying yarn and other forms of textile material. The cops are fastened to perforated rolls, which in turn are set in a revolving cylinder.

Pick Counter. Otto Wiegand, Chemnitz, Germany. A pick counter to be attached to looms to indicate the number of picks in the cloth as woven.

Spindle Oiler. Max an Haack, Warsaw, Russia. An improved oiler for spinning spindles.

Duster. Moritz Dawid, Einsiedel, Austria. An improved duster for raw stock, which is claimed to be convenient and efficient in operation.

Color Sampling Machine. Wegmann & Co., Baden, Switzerland. An attachment for dyeing machines by which a sample of the material can be withdrawn during the dyeing process for comparing the color with the shade required.

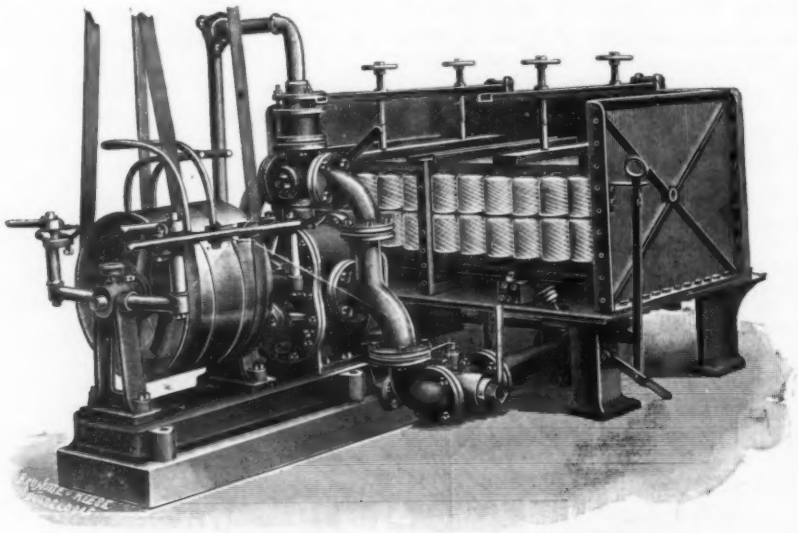
A NEW YARN DYEING MACHINE.

The machine shown in the accompanying illustration has been in successful use for a number of years in Germany, where it was developed. It has recently been introduced into the United States, the American agents being L. H. A. Schwartz & Co., 141 Milk St., Boston. The results obtained in this country confirm the claims made for the machine and make a description of it of general interest to the textile trade.

The construction is plainly shown by the illustration. The yarn is wound on perforated tubes made of metal or of paper specially prepared to resist the action of the dye liquor. These tubes are set in sockets in the false bottom of the machine, and by suitable perforated fittings two or more spools can be connected, thus increasing the capacity of the machine. The connection is made with short nipples, no screws being used, consequently setting the bobbins in place can be done in a very short time, only five or six minutes being required to fill the machine.

The illustration shows two layers of spools in position for dyeing. The top of the tube is closed by a suitable stopper so that the only passage for the liquor is through the material being dyed. There being no possibility of leakage, there is no necessity of packing material around the spools, as with some dyeing machines. A wooden rack is placed on the spools and held in position by screws and cross bars as shown in the illustration, so as to prevent any displacement of the spools during the process of dyeing.

The machine is so constructed that the liquor is passing upward through the tubes and downward through the yarn on half the spools, while on the other half the liquor is being sucked downward through the yarn and perforated tubes. The pump is reversed at frequent intervals so that the yarn on every spool is subjected to an alternating current of the liquor. For dyeing the yarn is usually packed in two layers, but it can be packed in four for bleaching, with satisfactory results. The circulation is maintained by a pump, which requires little power. While one set of spools is being colored another set is being prepared for insertion in the kettle so that the change can be made quickly when the yarn in process is colored.



A NEW YARN DYEING MACHINE, L. H. A. SCHWARTZ & CO., AGENTS.

We recently saw one of these machines in operation in one of the leading dye houses in New England. Both the superintendent and dyer were enthusiastic in regard to its work and stated that it does all that is claimed for it. We are informed that very light shades as well as fast sulphur black are being colored with this machine. Yarn bleached in

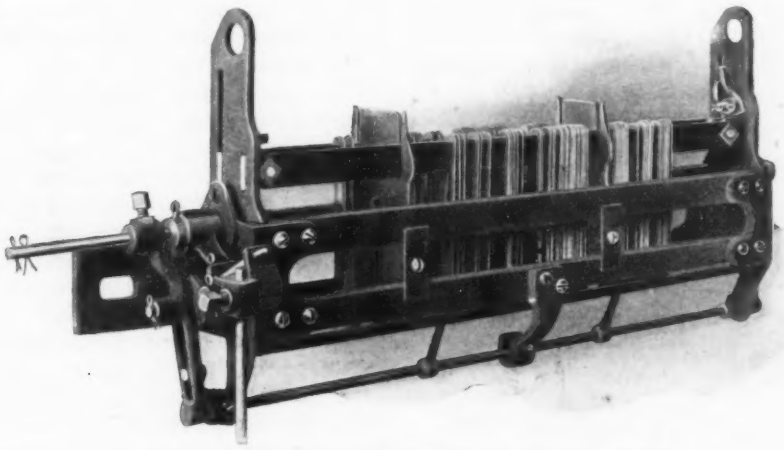
the machine can be colored without removing it. The spools of yarn do not touch each other during the dyeing process and the yarn comes from the machine in as good a condition for subsequent winding as when it went in. The machine we saw in operation was coloring two hundred pounds of yarn at a dip on sulphur black. While the production of the machine varies according to the process of dyeing employed, the builders claim that six or seven dips of fast sulphur black can be turned out in ten hours. The dye liquor required will not exceed the proportion of 8 parts to 1 of the stock.

The colors obtained are uniform and the process ensures thorough treatment of the material in every part. The machine requires very little labor for its operation and is built in different sizes for large and small plants, the largest accommodating 450 spools handling 450 pounds of stock at a dip. It is suited for any textile material, wool, cotton, worsted, silk, etc., and is built to handle yarn on cones, as well as straight tubes, and yarn, top, and other textile material in the form of cheeses. It is strongly built and not likely to get out of order. The machine has been patented in the United States as well as in foreign countries.

It is estimated that at present there are 231,199 cotton looms in Germany.

THE CROMPTON & KNOWLES WARP STOP MOTION.

The accompanying illustration shows a mechanical warp stop motion made by the Crompton and Knowles Loom Works, Worcester, Mass., that has been in successful use for the last six years, this being the first time a description of it has been published. During these six years a large number of the motions have been used on a wide variety of work with great success. It can be applied to any loom regardless of the style or make. It is adapted for general work, especially for denims and similar heavy weaving. The drop wires are suspended over the bars above the warp so there is no interference with the operation by reason of dust or lint.



THE CROMPTON & KNOWLES MECHANICAL WARP STOP MOTION.

The Crompton & Knowles drop wires, both mechanical and electrical, are made by special machinery, designed to produce a smooth finish that overcomes the fraying and cutting of the yarn that so often occurs with inferior drops. The Crompton & Knowles Company was one of the first to improve upon the construction of the old style of warp stop motions, and it now owns a large number of patents covering all the important features of improved motions. Some of these patents cover the use of drop wires placed between the harness and the back roll, with a supporting bar or bars for the warp threads to rest upon and support the drop

wires in position, free from the detecting means while the warp threads are unbroken.

Other patents of the company cover the use of removable frames, carrying the guide bars and the drop wires. By means of the removable frames, the guide bars and the drop wires may be readily removed from the loom for any purpose. Still other patents cover the use of braces between the ends of the frames, to keep the guide bars from bending.

The company also owns patents in which, when a drop wire co-operates or contracts with mechanism through which the loom is stopped, the knock-off dagger will at once be placed in an operative position, to make more certain the stopping of the loom.

In addition to the mechanical stop motion the Crompton & Knowles Loom Works supply an electrical stop motion that is giving satisfaction. The drop wires and electrical contact bar are placed above the warps, thus overcoming the tendency to ignition of the yarn, and ensuring the contact necessary for machines of this kind.

AUTOMATIC SAFETY DEVICES FOR STEAM ENGINES, TURBINES AND MOTORS.

BY CHARLES M. HEMINWAY.

(A paper read before the American Institute of Electrical Engineers.)

The increasing use of automatic appliances is a noteworthy feature of the tendency in engineering development. In the electrical industries automatic appliances are largely used, and the results have been so good that we find the peculiar flexibility of electrical systems leading to their use for automatic apparatus in other lines of work.

There is probably not an electrical system today, either for transportation or power purposes, for lighting, telephone, or any of the other various applications of electricity, in which some automatic devices are not used. These appliances may take the form of regulators or governors for controlling the performance of a machine. In railway work they are extensively used for signaling.

Automatic stops bear the same relation to steam-engines and turbines that safety-valves do to boilers or circuit-breakers to dynamos. It is probable that the universal adoption of circuit-breakers closely followed an unusually large number of accidents; similarly, the alarming increase in the number of runaway engines and resultant fly-wheel wrecks will doubtless hasten the general use of safety devices for engines and turbines. There is a general impression among engine owners that the governor on the engine is a safety device, and is capable of providing for all emergencies; this is a fallacy, as statistics show that about 200 reciprocating engines and several turbines and rotary converters have run away in the past 20 months and all had governors.

The governor is designed to keep the speed of an engine constant under variations of load, but as most governors are arranged to operate by centrifugal force they cannot act instantly as when the load goes off suddenly; it is for this reason that there is real need for a safety device entirely apart from the governor that will act quickly in case of emergency.

Some of the causes of recent fly-wheel accidents are: Breaking of main belt; loose governor pulley; reversal of dynamo; sticking governor, but chiefly the breaking or slipping of a governor belt and the sudden relief of the load.

Some plants now carry fly-wheel insurance, which includes periodical inspections. This furnishes monetary protection, but does not insure safety; for in spite of the inspections, fly-wheel accidents continue to occur. It will be readily seen that while inspections may detect a weakness in some part of the engine equipment, or the inefficiency of an engineer, many things may happen between the inspections. While the insurance pays the property damages and personal injuries, it does not make good the losses from non-production pending repairs to the plant nor the wage loss of the employes. Obviously, then, the remedy lies in the providing of such means as will prevent accidents.

There is still another use for the same device; namely, to shut down the engine from a distant part of the plant by pressing a

switch. When an employe is caught in the machinery, when the belting breaks, when the shafting or machinery is out of order, when a cylinder-head blows out—in all cases when it would be impossible to reach the throttle promptly, the automatic stop is invaluable.

Engine-stops are of varied design and are applied in many different ways. Most of them are designed merely to stop the engine mechanically in case of over-speed. There is a growing tendency toward the use of electric current to trip the engine-stops, thus allowing them to be operated from any number of points.

One stop is designed to be attached to the governor column, and upon being tripped electrically, opens a steam valve allowing steam to enter a small cylinder against a piston which raises the governor balls to their maximum position thereby cutting off the supply of steam to the cylinder. This is a reliable stop and in connection with a speed-limit device is very effective.

The speed limit consists of a centrifugal device connected to the engine-shaft by a chain-drive; it is in circuit with the engine-stop and can be set at any predetermined speed; when this speed is reached, electric contact is made tripping the engine-stop.

Other forms are applied to special valves which must be placed in the steam line and operated as an auxiliary to the main throttle-valve. The valve in these forms is usually closed by steam pressure, the steam being admitted to some small cylinder and moving a piston in closing. These forms have many points in their favor but care must be taken to keep them in order, and the expense of inserting a special valve in a steam line already erected is rather great.

Another type of engine-stop operates directly upon the throttle-valve and can be easily applied to any engine without interfering with its regular work. This stop is bolted to the engine-frame at any convenient place, and is attached to the valve-stem by means of a sprocket-wheel and chain. As the valve is opened, a cable, to one end of which is attached a weigh, is wound on a drum on the stop and is held by a pawl which engages in a ratchet-wheel. When the stop is tripped electrically the weight is released, revolving the sprocket-wheel and thus closing the valve, a dash-pot in the stop forming a cushion to prevent jamming the valve. This, in connection with the speed limit, forms a very satisfactory device; and as gravity is depended upon for doing the work there is nothing that is likely to fail in operating.

Another engine-stop also operating on the throttle and connected to it with a sprocket-wheel and chain, similar to the one just described, is operated by an electric motor, 1/4 h. p. or 1/2 h. p. This is more expensive on account of the motor and the necessary generating apparatus. The current can be taken from busbars, but in order to insure reliability it is advisable to have the engine furnish its own current. This kind of stop is particularly desirable in units having 12-in. valves or larger.

In order to insure protection for all contingencies, an automatic vacuum-breaker is wired in the circuit with any of the engine-stops where condensing engines are equipped with this safety device, so that if the engine should be shut down automatically, the automatic vacuum-breaker will operate simultaneously with the engine-stop opening the exhaust to the atmosphere.

Another provision for safety has been provided in an automatic circuit-breaker trip which also is wired in the circuit with the engine-stop. In plants where engines operate generators in multiple, the closing of the circuit, either automatically by the speed limit or from any of the push-switches in the system, operates not only the engine-stop, but also the circuit-breaker trip, cutting out the generator to prevent it from running as a motor.

Where electricity is used in tripping a stop it is desirable to have some means of testing the circuits and strength of the batteries. A very satisfactory system is in use for this purpose; a small slate testboard is used having upon it a switch for tripping the stop, a buzzer or a lamp, and two small key-switches which are used for testing the circuits. The buzzer is of high resistance, and if the batteries are getting weak an intermittent response of the buzzer will indicate this, and

yet current for at least twenty-four hours is still available to use the stop, allowing sufficient time for recharging the batteries.

A failure of the buzzer to respond to the pressure of the test-switch indicates a break in the wiring, but pending repairs to the wires it is possible to shut down the engine either automatically by the speed limit or from any of the push-switches. This is accomplished by throwing the wires from multiple into series for a test, so that though the indication of a break in the circuit is instantly detected, the engine-stop system is still in commission. This is one of the strongest points in favor of engine-stops, as it insures reliability; the safety device cannot be crippled by weak batteries or broken wires but is always ready for emergencies.

If the generator furnishing this source of current is shut down or a fuse blows, the armature falls by gravity to the battery terminal and the engine-stop system is then operated from the battery circuit until the direct circuit is again in service. This system adds an additional safeguard from the fact that there are two sources from which to operate the engine stop. It is particularly desirable in factories, where the generator current is not on during the day. It lengthens the life of the batteries, as they will only be used a portion of the time.

It has frequently been said that automatic safety stops are an expense that do not add to the efficiency or economy in the operation of the plant. A few facts bearing on this point will serve to prove the contrary. First, certain types of stops are recognized by the liability insurance companies, and a reduced rate on employers' liability insurance is allowed; secondly, where automatic safety stops are used, fly-wheel insurance can be dispensed with. Here are economies that begin to accrue the moment the stop is installed.

A NEW RAMIE MACHINE.

BY CHAS. RICHARDS DODGE.

In a recent consular report there appears a statement concerning a "simple and inexpensive machine" that has been recently devised "to remove the gum from the (ramie) plant and to permit it being spun and woven as easily as cotton or flax." These ramie machines have bobbed up at regular intervals during the last forty years—or ever since the Indian government offered a prize of several thousand dollars for a successful cleaning device—but the fiber is still produced by laborious hand methods, and only in the Orient.

The first error in this consular statement is that a "machine" has been devised to remove the gum, etc. The process for the removal of the gum is chemical and not mechanical. It is a secondary process and has nothing whatever to do with securing the raw fiber from the stalks when grown. That must be done either by hand-manipulation or by the use of machinery. There are quite a number of processes for the removal of the gum that have been employed in the ramie manufacturing establishments of Europe for years,—where the fabrics are being produced as a commercial enterprise, Oriental hand-cleaned fiber being employed. The very fact that raw ramie fiber of superior quality can be laid down in this country at the price of jute (according to present market quotations) makes the American production of ramie fiber an impossibility, even if there was a machine, for the stalks could not be grown, harvested and the two per cent. of raw fiber extracted, at a price that would admit of competition.

The writer has officially tested the best machines of Europe and America, and while some of them produced a beautiful fiber, they could not turn it out in paying quantity, and I am even skeptical regarding our ability to grow the kind of stalks that would be required as a commercial proposition, although the plants thrive in any of the Southern states.

Ramie articles are already beginning to appear in the newspapers—based on this consular statement—which can but prove misleading. Space-writing upon technical subjects by the uninformed is rather risky business. To correct the many errors in one of these articles before me would require pages.

AN IMPROVED GASSING MACHINE.

Fig. 1 shows a gassing machine built by the Woonsocket Machine & Press Co., Woonsocket, R. I., which embodies many improvements. It is suited for both cotton and silk yarn and can be made with any number of spindles desired. The builders believe this machine is unequaled both for quality and quantity of work. The average production per week on 2/26s is about sixteen pounds for each drum; a very compact ball is wound, as is shown at Fig. 2. For cotton yarn the driving pulley runs about 120 r. p. m. Change gears are provided by which the speed of the drum can be varied between 50 and 150 r. p. m. according to the material used. The coarser the yarn the slower the drum should be run. For gassing silk the driving pulley runs about 250 r. p. m., giving the material four passages on the frame and producing about three-quarters of a pound per spindle per day.

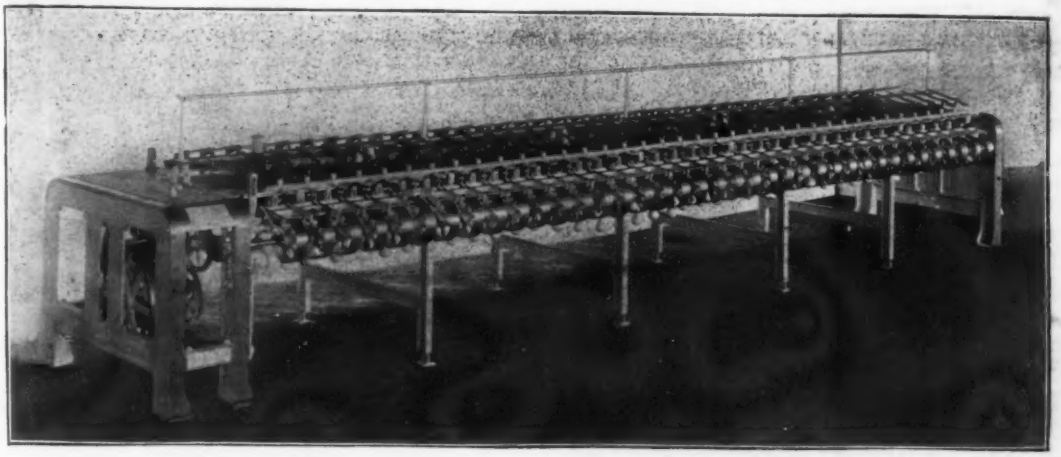


FIG. 1.

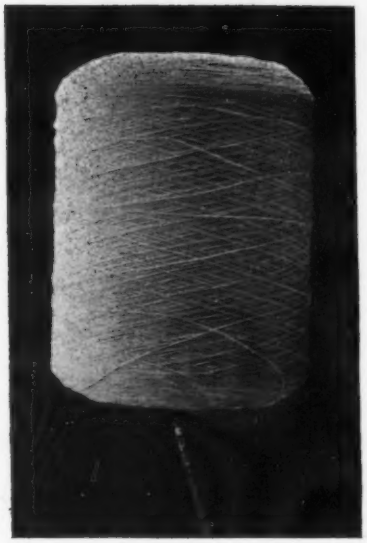


FIG. 2.

THE HOOK OR LOOPER OF THE OVERLOCK MACHINE.

To illustrate the absolute precision of the methods of manufacture of the mechanism by which the Overlock corded edge is produced, the Willcox & Gibbs Sewing Machine Co. is showing in its New York office a panel on which are placed thirty-three exhibits of one part, the Overlock hook, showing the hook in that number of stages of construction. There are in all ninety-one stages through which this hook passes from start to finish, but the thirty-three shown are the most perceptible to the ordinary observer.

The Willcox & Gibbs Co. describes its machines as "instruments of precision;" they are accurately made in every detail to the fraction of a thousandth of an inch. The Overlock hook requires a larger number of operations in its construction than any other part of the machine. The exhibit at the company's New York office is of special interest to manufacturers of lace curtains or other fabrics to which the celebrated Overlock corded edge is applied. After each hook is finished it goes to the testing tool. The hook is placed in the tool in which there are a number of easily moving metal slides. Each slide in succession is pushed against the hook and if when in contact with it all the slides are even with the surrounding metal when they press upon the hook within, which is being tested, the hook is declared perfect. Further to ensure absolute accuracy there is a master tool by which all the testing tools in use are frequently compared and kept in precise agreement. Thus absolute precision is maintained.

All parts of the Overlock machine are made interchangeable and can be replaced without trouble in case of accident.

This is a part of the thorough system that has resulted in the popularity of the Overlock corded edge, which buyers of lace curtains are specifying when ordering Nottingham and Irish point curtains of the manufacturers.

THE DRAPER METHOD OF MEASURING WARPS.

Among the necessities in the production of balls on warp balling machines is to have an accurate measurement of length, so there will be no excess of waste when several balls are made into one warp. The Draper Co., Hopedale, Mass., are getting very favorable results from the use of their new method, by which the pulley around which the chain takes a half turn is utilized to actuate the measuring mechanism. The pulley being of large diameter gives sufficient surface contact so that there is no appreciable slip as with the smaller measuring roll. Fig. 1 shows the stand supporting the pulley and measuring device.

The ball itself is wound by contact with two separate rolls, giving large driving power.

The new Draper patent warper clock is also plainly indicated on this pulley stand. This is one of the more important new attachments. Fig. 2 shows the clock attached to the warper itself, although few warpers

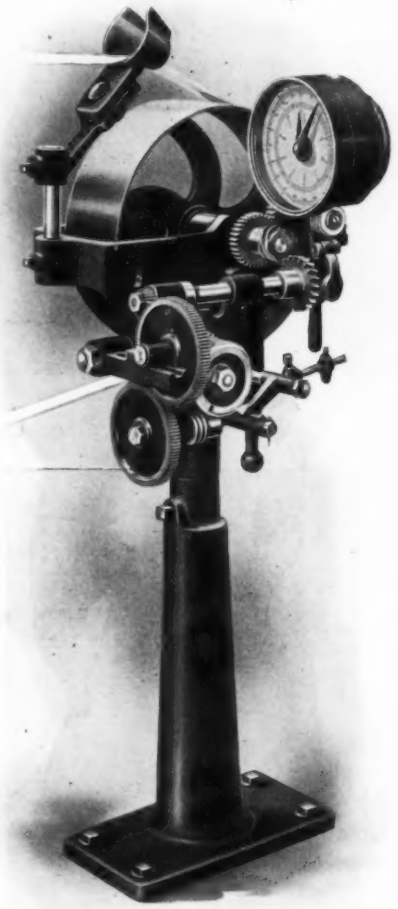


FIG. 1.

are sold like this to wind balls directly from the cylinder drum, at present.

The clock is of exceedingly simple construction, and it indicates directly just how much yarn is being wound at any time. It can be set to work very close to any desired length. The builders think it superior to

anything of the kind ever placed on the market.

The Straw leasing motion is used, and the warper clock will stop the machine at any point where thread leases are desired. The builders caution their customers regarding the use of excessively heavy spools, unless they are willing to use larger rolls on which to wind the balls, because the strain on the chain when winding the core of the ball is so great that there is not sufficient friction to start the winding properly with the ordinary size of roll.

For the ten months ending October, 1905, there were imported into the Philippines 74,059 pounds of raw cotton. Of this amount all but 1,100 pounds came from the United States.

The value of the imports of cotton goods into the Philippines for the ten months ending October, 1905, amounted to $5,669,665; of this amount $2,467,897 came from England, and $732,880 from the United States.

A TENSION DEVICE FOR DRESSER CREELS.

A yarn tension device for dressing frames, recently patented in this country, is shown in the accompanying illustrations. It consists of a plate bearing on the yarn on the spool, this plate being attached to a rod to which the spring tension device is connected.

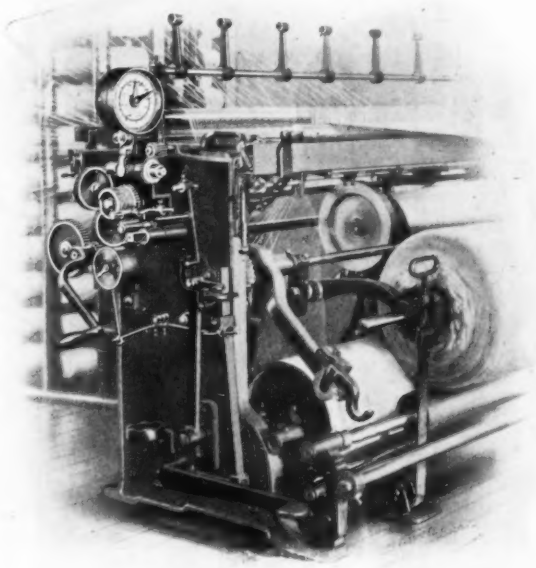


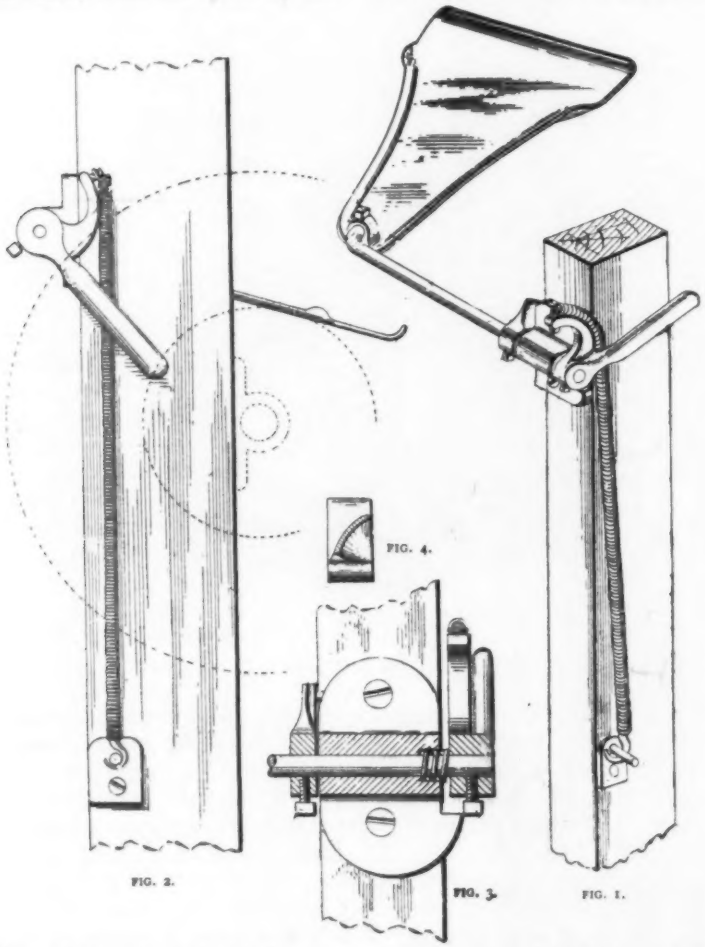
FIG. 2.

The bearing part is secured to one side of the rack, provided with a bearing and having a locking-stud projecting from the inner side. The tension-plate is provided with a lug having a set-screw. A pivot-shaft for the tension-plate is journaled in the bearing and has its inner end inserted in an opening in the lug so that the tension-plate is detachably secured. At the outer end of the pivot-shaft is an arm and a segment-arm provided with an opening for the end of the pivot-shaft. A short spring is employed to move the pivot-shaft endwise in one direction. At a suitable distance from the bearing-plate there is a hook, secured to the side of the rack and to which is connected one end of

a long tension-spring. This tension-spring engages the segment-arm and causes the tension-plate to bear on the warp of the spool as the yarn unwinds. By means of an arm the pivot-shaft may be turned to raise the tension-plate from the spool. When the tension-plate is raised from the spool by the partial rotation of the pivot-shaft, the cam-arm moves the pivot-shaft inwardly to a slight extent against the tension of the spring. As the cam-arm clears the stud the short spring draws the pivot-shaft outward to engage the cam-arm with one side of the stud to form a stop. As soon as the cam-arm is disengaged from the stud, which may be done by moving the pivot-shaft inwardly against the tension of the spring, the spring reapplies the tension-plate to the spool, the tension of the spring serving to keep the tension-plate in engagement with the spool as the warp yarn unwinds.

A WEIGHTING DEVICE FOR COMBERS.

An English combing machine for cotton or wool developed in Oldham, has recently been patented in this country. As stated by the inventor, the improvement consists in the use of a mechanism to relieve the operatives when applying or removing the weights required to obtain the pressure on the rolls. With the new device the weights can be easily lifted and the rollers relieved from the pressure when the machine is stopped for any length of time. If the weights are left on the rolls flat places are formed on the leather covering. Each draw-box and detaching roller is provided with a device



moved by a cam and engaging with the respective weight. This enables the weight to be easily raised by the operative. Fig. 1

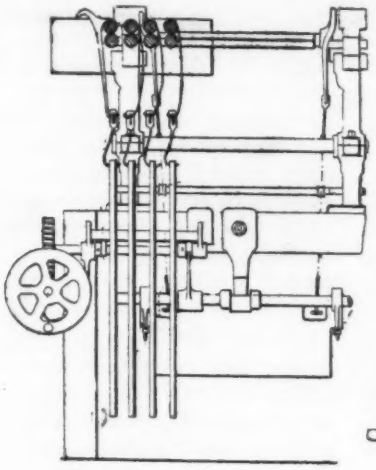


FIG. 1.

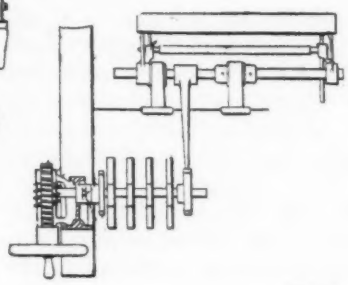


FIG. 2.

shows a front elevation; Fig. 2 is a plan of the combing-machine; Fig. 3 is a transverse

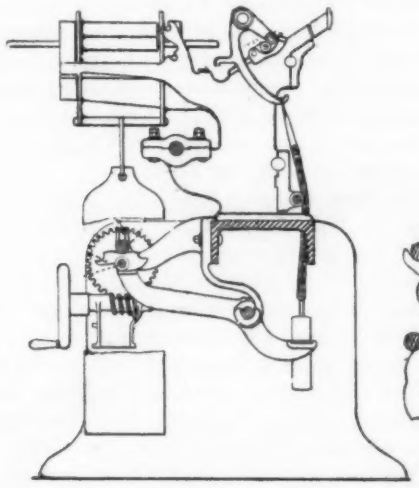


Fig 3.

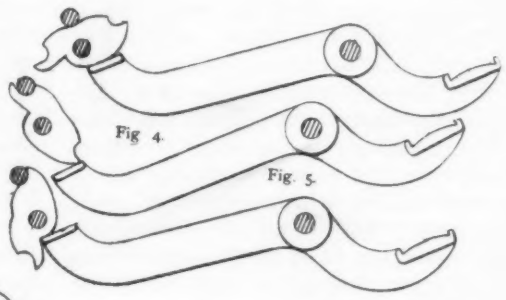


Fig 6.

vertical section; Figs. 4, 5 and 6 are elevations, partly transverse sections, showing one of the cams in three different positions. Only one of the top detaching-rollers is shown in the drawings. Hooks of the ordinary form, of which two only are shown in the drawings, are arranged to bear in the ordinary way upon the necks of the top detaching-rollers, and these hooks are respectively provided in the ordinary way with projections, by which when removed from the top detaching-rollers they may be made to rest upon projecting supports provided to receive them on the brackets.

According to official statistics the average wages in the German cotton industry are $191 a year in the North and $163 a year in the South.

The total annual value of the textile imports into Turkey exceeds $20,000,000. America contributes little to this trade except the standard gray sheetings.

Dyeing, Bleaching, Printing, Etc.

WHAT A DYEHOUSE AND PRINT WORKS CHEMIST SHOULD KNOW.

(A paper read by Dr. A. Herz before the Bradford Society of Dyers and Colorists.)

The dyehouse or printhouse chemist, which I will call the colorist or the chemist, when engaged at a salary varying from $2.50 to $10.00 per week, generally has his first talk on entering the works with the commercial leader of the factory, who naturally has only a very vague idea as to the work he is going to apportion to his newly engaged chemist. He will take the new man first into what he calls the laboratory, will make a few excuses about the smallness of the place—they are really needed,—promising an extension, which is rarely carried out. The chemist, of course, looks round with amazement; he has been used to the bright laboratories of his university or technical college, and now finds himself in a chaos of some broken bottles, two burettes, and the unavoidable youngster—commonly called the bottle-washer,—who has been extremely busy from the very moment the employer entered the room. After the laboratory inspection, the chemist is taken into the dyehouses or printsheds and introduced to the foremen. The employer asks the foremen to give the new chemist all possible assistance and help, explaining at the same time that it is his will and wish to have the whole department worked on a more scientific scale. This is the moment when I advise the chemist to observe the faces of the foremen, as they might give him a hint as to the course he will have to adopt for the near future. The chemist goes back to the laboratory, thinks over what he has heard and seen, and has a talk with the bottle-washer, who is, of course, very busy again. The best thing for the chemist to do is to question the boy as to what has been done by his predecessor—if there has been one. He will in this way find out that some titrations have been done and occasionally some pattern dyeing or printing, while a fair amount of time has been spent in making drugs for the horses, and sometimes human beings.

Now the chemist should start afresh and not rely on his predecessor. I would suggest he take a catalogue of some laboratory furnishers and make out a complete list of apparatus and chemicals required to bring the laboratory up to a proper state of efficiency. After this has been obtained he should make up his mind to leave the works alone and settle down for analytical work only. He should procure samples from every dye and every chemical used in his works, sampling kegs and casks himself, and analyze the chemicals most carefully, and dye or print the dyewares in order to find out whether the materials used are satisfactory in quality. Having satisfied himself that there is nothing objectionable about these whole drysalteries, he should commence the second part of the arduous work before him —viz., the comparison of the drysalteries used with competitive products from other reliable firms. The first piece of work he did practically for his own information; the second is to be done for a practical end—viz., the cheapening of the drysalteries. In order to do this effectually he should first obtain all the prices from the buying clerks, and should there be any difficulty, he should at once put the matter to the manager for decision, who without hesitation will agree, because there is the possibility of a saving in cost. The figures obtained should, of course, include prices, discounts, and statements as to whether the respective goods are delivered free to works or whether carriage is to be added to the price.

The colorist should take the whole list, and dividing it into dyewares and chemicals, ask other reliable chemical manufacturers or drysalters to supply him with samples and quotations for the chemicals which he will specify; all these samples he will have to analyze, and wherever he finds a difference in the value of more than 5 per cent., I would strongly advise him either to try to

induce the old supplier to reduce his charges or else change to the new man.

It is more difficult to come to the proper conclusion in regard to the dyewares. Of each individual color used the chemist should obtain two or three samples from reliable firms, and these he should compare by comparative dye tests as to value. In addition, any new color which he thinks might take the place of a color in use at the works should be put through some special tests, according to the work for which it is required. For instance, if it be used for linings, the color should be tested for fastness to perspiration; in yarn dyeworks the color should be tested as regards fastness to milling and stoving; whereas in mercerized yarn dyehouses or carpet works the dyes should be examined as regards their behavior in artificial light. The value comparison will be the same for any dye or print works; the other tests are bound to vary, and it will simply mean a few questions to be put before the chemist is able to decide what additional tests are wanted.

What should a chemist know in order to be able to carry out successfully the work that I have explained to you, a work that will occupy him for fully three months with the assistance of a junior to carry out the dye tests? In the first instance the chemist should have a complete knowledge of inorganic chemistry and quantitative analysis; in quantitive analysis I include the knowledge of technical analysis, for the work I have specified includes such chemicals as oils, soaps, starches, flour, and dextrines, water softeners and similar matters, which are not touched upon in the course of ordinary quantitative analysis. Exactness of his results is essential—a man who cannot do a quantitative analysis correct to 0.05 per cent. is practically of no use.

It is inside the works where he should find his problems for research work; nobody will give him the problems: he has to dig them out for himself. What should a chemist know for this purpose in addition to the knowledge which was wanted for the work of the first year in the works? What should be his additional knowledge? Practically none; it is brainwork pure and simple, and the chemist who wants to make progress should not economize his brain powers—he should apply them freely, taking it of course for granted that there is no anatomical deficiency. The average chemist will soon find that even in works of a moderate size, the work in direct connection with the manufacturing processes is the work in which he may obtain his greatest successes; the analytical and coloristic work is the basis on which he has to build up his improvements of the manufacturing processes. He must try if he thinks there is something in it, and must not be led away by being told that the same thing was tried twenty years ago.

I have now shown you what a dyehouse or printhouse chemist should know; let me say a few more words as to the best means to obtain this knowledge. I am of opinion that the whole system of teaching the important science of chemistry, as well as dyeing, in this country is right enough; in any case I could never detect any difference between the English and other systems. But the system does not produce a material sufficiently strong to stand the breaking tests of the manufacturers. In other words, I do not think that the average student is in a fit state of preparation to understand and make full use of the science he is taught. I am not going to speak about the merits of secondary or technical education; I repeat that the English student, whether of a technical school or university, enters for his special studies at an age at which he should be devoting himself to training his brain at the grammar school or similar institutions; by entering for his special studies too early in life he will in most instances put no more energy into the study of chemistry than into that of cricket, and the resulting chemist is one who has only a remote idea of what he should know.

In order to become a successful dyer's or printer's chemist I would suggest that the young man should not leave school before he has attained the age of eighteen; he should then enter a technical college or university and devote himself entirely to the study of chemistry, taking physics and mathematics as secondary subjects. I do not think it is possible to study chemistry successfully in

less than three years. After these purely scientific studies, he might go into the dyeing and printing departments, where he will pick up in about twelve months all that is necessary for him in order to make himself fit for any chemist's post in dyehouse or printworks. If he has the money to spare I would advise him to go abroad for a short time and try to be admitted as volunteer into one of the dyeing laboratories of the great Continental color firms. I am afraid that some will say that my ideas are impracticable, but I am convinced that it can be done in England as well as it is done in other countries.

SHODDY DYEING AND STRIPPING.

BY HORACE ISHAM.

In respect to dyestuffs, shoddy dyeing requires about the same as loose wool. The acid, chrome topped, anthracene, basic and diamine colors can be used and the method of dyeing is the same as on loose wool, both in the open kettles and in the dyeing machines. The stripping agent used depends on the color wanted. The chief agents are alkali, bichromate of potash, sulphuric acid and hyposulphite. In some cases a bright colored shoddy can be stripped with a 10 per cent. solution of soda crystals, treating the stock for about twenty minutes at 120 degrees F. If the material is to be dyed light shades it can be further stripped with bichromate, care being taken not to get the chrome bath above 160 degrees F. If the bath is allowed to get above that it is liable to make the shoddy too yellow. This is objectionable when light shades are wanted.

Very dark colored shoddy, which usually cannot be stripped enough by the alkali method, is often successfully treated with bichromate of potash and sulphuric acid. The bath is prepared with a solution of 3 to 4 per cent. of bichromate of potash, 6 to 12 per cent. of sulphuric acid, and 2 to 5 per cent. of oxalic acid. The shoddy should be boiled for about one hour then well rinsed in a kettle before the dyestuff goes on. When topped with chrome one-half the usual amount of chrome is all that is necessary in the afterchroming. This method of stripping is suited for all colors where yellow is used, such as browns, greens, etc., as it leaves the shoddy a yellowish shade.

For the hyposulphite process a solution is prepared with one pound of zinc dust to one gallon of sodium bisulphite 7 degrees Tw., diluted with one gallon of cold water. When the solution has settled three to five pints of clear solution are mixed with 1 1/2 pints of acetic acid and ten gallons of water. The shoddy to be stripped is treated in this solution for about thirty minutes at 140 degrees F. It is then rinsed well and treated to a weak solution of sulphuric acid, rinsed well again and it is then ready for dyeing.

The hyposulphite solution should always be freshly prepared for use as it soon loses its strength if allowed to stand for any length of time. Stripping with Hyraldite A is generally done when the other processes fail to do their work on account of the stock being too yellow for the shade wanted. The amount of Hydraldite used depends on the depth and fastness of the color of the shoddy to be stripped and on the degree of stripping required. In preparing the stripping bath from 5 to 10 per cent. of Hydraldite and the same amount of acetic acid are added to lukewarm water. Enter stock at once and work well while bringing to a boil in from half to three-quarters of an hour. Boil fifteen minutes, rinse well, then treat in a weak solution of sulphuric acid. Rinse well again and it is ready for the dye bath.

ALKALINE SOLUTIONS OF ALIZARINE.

The usual method is to dye the previously mordanted goods in baths containing the dye not in solution, but suspended in very fine particles. This makes the formation of the color take a very slow process, and requires exact regulation of temperature to prevent loss of dye by getting the bath too hot. It appears that these difficulties can be overcome by impregnating the fabric with an alkaline dye solution, and then with the mordant, developing afterwards with steam. This enables the dye and mordant to be used in cold baths, and also makes the whole time about equal to that previously occu-

pied by the mordanting alone. Moreover, no fixing agents are wanted, and the dyebaths can be used again.

The process can be carried out with an ordinary padding machine and a hot flue; the bath is prepared as stated above by dissolving the dyestuff in solutions of ammonia, a caustic or carbonated fixed alkali carbonate of ammonia, borax, waterglass, aluminate of soda, or other liquids having an alkaline reaction. To these inorganic solvents may be added such inorganic bodies as alkaline soaps. In practice, however, the volatility of ammonia and its want of action on the fabric secure for it the preference.

The concentration of the alkaline solution depends partly on the dye used and partly on the shade desired. For dark shades the goods should be passed through twice before drying. This repetition is very conducive to leveling. For light shades mordanting can be done in the same bath with Turkey-red oil, etc. The goods are then dried on the hot flue, the ammonia evaporates, and leaves the solid dyestuff on the fibre. The goods are next mordanted in a bath of acetate of alumina, lime, chromium, or iron. Mixtures of these salts may be used. The goods are again dried, and then require steaming. At the same time, the fixation of the dye, when the goods have passed the mordanting stage, but are unsteamed, is just right for discharge work, although not sufficiently good for a permanent result. The steaming is done for two hours at 1 1/2 to 2 atmospheres.

If the steamed goods are printed with a thickened metallic mordant, patterns may be made of the change of color in the printed places. Thus chromium acetate makes a cutch brown on a red ground, and pyroligneate of iron gives a violet black on the same ground. This printing can also be done before steaming, which develops the two colors at the same time.—Die Deutsche Faerber Zeitung.

The London Commercial Intelligence reports that at present there are 9,730,209 spindles engaged in the German cotton industry.

DYEING LOOSE WOOL.

BY LEWIS MOODY.

In dyeing loose wool, especially on very bright colors, it is often necessary to use the aniline dyes as the alizarines do not give the bloom that is wanted. In many cases where the goods do not take too long in fulling a scouring with a good fast aniline color is all that is required. There is quite a line of these colors on the market, such as the milling reds, yellows, blues, greens, etc., also the formyl violet and blue, acid violet, the patent blues, Fast Acid Violet R, Mordant Yellow O, as well as the different styles of one-dip wool colors. There are also the chrome colors that work on a chrome mordant and are also chrome topped and from all these we can get a line of very bright and fast colors. Many of the diamine colors are fast to milling on wool.

In dyeing with the diamines the bath is started with from 10 to 20 per cent. of crystallized Glauber's salts and about 3 per cent. of acetate of ammonia. Enter the wool at from 120 to 140 degrees F., boil up in half an hour and boil from three-quarters to one hour. Then add slowly to the bath from 3 to 5 per cent. of acetic acid to exhaust. The after treatment with bichromate, chromium fluoride or sulphate of copper can now be done in the exhausted dyebath, or in a fresh bath with from 3 to 5 per cent. of acetic acid, boiling for about half an hour.

The chrome topped dyes are largely used on loose wool. The bath is prepared with from 10 to 20 per cent. of crystallized Glauber's salts and from 1 to 5 per cent. of sulphuric acid according to the depth of shade required and the necessary dye. Enter the wool at about 140 degrees F., bring to a boil in about 20 minutes and boil one hour, then shut off steam and add slowly from 2 to 3 per cent. of bichromate. Bring to a boil and boil for 20 minutes longer.

Then there is a line of colors that work well on a chrome mordant. A number of these can be used with the regular alizarines and they make very fast colors that are fairly bright. The mordant bath is started with from 2 to 3 per cent. of bichromate and

from 1 to 3 per cent. of oxalic acid. For very bright colors about 1 per cent. of ground alum will improve the shade. Boil from one hour to one hour and a quarter. Draw off this bath and start the dye bath with about 10 per cent. of common salt, from 2 to 3 per cent. of acetic acid and the necessary dye. Enter the wool moderately cool and bring to a boil in about 45 minutes. If the bath is not exhausted at the end of an hour's boiling, feed in slowly from 1 to 2 per cent. of acetic acid. Extract of fustic, extract of logwood, alizarine and the regular chrome anilines can be used together in this process with good results.

Some classes of dyes will not give good results if the water is hard; the water should then be softened with oxalate of ammonia, using from two to six pounds of the salt to 100 gallons of water according to its hardness. It is also difficult to get good even colors if there are two or three grades of wool in the same bath. In such cases it is well not to use any acid until the bath has been boiling for some time. The acid should be fed in slowly to get the best results. If it is necessary to feed on the dyestuff, as is often the case to get the shade required, the dyestuff should be well diluted and put on slowly in order to get even colors.

DYEING AND FINISHING CARRIAGE CLOTHS.

BY M. P. SARGENT.

As a rule carriage cloths are made of fairly good stock and weigh from seven to sixteen ounces to the yard. The finish is what is known as the face finish and the nap on the goods is as short as possible while keeping the threads covered. The cloth must have nap enough so that it will not rough up when it is being handled and, what is more to the point, when it is in actual use. A cloth that will rough up will be objected to decidedly; in order to get the desired effect the goods will have to be well felted. The fine thick bottom of nap desired for a piece of broadcloth will not do at all for a piece of carriage cloth.

Carriage cloths when leaving the loom should be carefully inspected and all the imperfections looked after, such as threads out, mispicks, etc. When the burling and mending have been carefully done the goods are ready for the fulling mill and undergo the process that largely determines the success or failure of the finish. The calculations in this process must be carefully attended to in every respect. The finished weight wanted must be known, as well as the loss in weight during finishing. It is sometimes difficult to say just what this loss will be, but probably 15 to 25 per cent. Carriage cloths are usually made so that a shrinkage of three to five inches per yard will give the result desired, and the goods should have from four to five hours' fulling in the mill. The soap should be selected carefully and a good soft soap with as little alkali as possible is the best. All soaps used in fulling should be strictly neutral. A finisher should not use a soap containing an amount of free caustic, although of course a certain amount of alkali is necessary to loosen the grease and start it well.

When soaping the goods for the fulling mill care must be taken to have the right degree of moisture; having them too wet is almost as bad as having them too dry. The traps may be let down for an hour or so without any weights and then on examination it will probably be found that they are in need of a little more soap. At the end of two hours they should be examined for shrinkage. Judgment will have to be used here in regard to the weights needed on the traps so that they will shrink sufficiently in length by the time they are up in width. Towards the end of the fulling process the heat of the goods must be carefully looked after as overheating at this point will destroy the lustre.

When shrunk to the desired length and width the goods are ready for washing, which should be done at once. After putting the pieces in the washer there should be enough warm water run in to fill the washer half full and the pieces run for twenty minutes. The gates are then opened and the goods washed with warm water for about ten minutes more. A good scouring soap should now be applied until a good creamy

lather is acquired and the goods run in this for about fifteen minutes; wash off well with warm water for about fifteen minutes and then with cold water for about thirty minutes. The goods should now be clean and bright for the processes to follow.

The next step is carbonizing. The sulphuric acid process at from 6 degrees to 7 degrees, B., is generally used and the goods run in an acid tank for about twenty minutes, then through rubber squeeze rolls, after which they are taken out and thoroughly extracted. They then go to the drying room or dryer and are run at 180 to 220 degrees, as all burrs or vegetable substances must be carbonized before the desired results can be obtained. Next the pieces are taken to a specially fitted up fulling mill for a beating. This mill should be heated; after running in this mill for about fifteen minutes no vestige of vegetable matter should be left in the goods.

From here the goods go to the washer and are neutralized, a mixture of alkali and ammonia being the best solution. A little litmus paper will soon tell when the goods are neutral. They then go to the extractor and are extracted to leave them fairly damp; the best results in gigging are obtained in this way, either on the old fashioned teasel or the more modern napper. Most mills now use the napper as the same results are gained in a much shorter time. From the napper or gig the goods go to the boiling tank or steamer. The boiling tank is an out-of-date method as it takes up too much valuable time and the same results can be obtained on a steamer in about one-tenth of the time. On the steamer the goods are run face down and run round with the first cylinder full of water. This with a middle brush will have the same effect as a wet gig. The pieces are run on each cylinder with steam for about thirty minutes, the length of time depending on the amount of lustre desired. After this the pieces are allowed to stand on the roll over night and the watchman notified to turn them end for end about midnight.

These goods must be dyed colors that will stand the exposure test and be fast to light. They are generally dark green, dark blue and brown. The dark blues and browns were formerly dyed with alizarines. At one time I had some trouble with this method on account of the goods crocking. The superintendent would rub the goods briskly with a white handkerchief and if the least stain came off he would not pass the goods. There was no trouble with the browns, only with the blues and greens. The dyestuff could not be blamed for all the trouble as the water used in dyeing contained considerable lime, but after trying in various ways to overcome the difficulty and not succeeding I thought it time to change dyestuffs so went to the acid process, or what is known as the chromotrope colors. This gave results satisfactory in every way as they are chrome topped colors, very fast to light, and answered all purposes. They require no washing when leaving the dye kettle.

After dyeing the goods go to the extractor, are dried, and then sheared, in which latter process great care is necessary as they must be brought down gradually to what is wanted. From the shear they are given two or three runs on the brush with a little steam. They are then inspected, pressed and after a couple of more runs with a little steam on the brush are ready for rolling and shipping.

Color Cards.

Immedial Deep Green G; Cassella Color Co., 182 Front St., New York City.

A card showing five to ten per cent. dyeings of Immedial Deep Green G on raw cotton, cotton yarn and piece goods. Full working directions are given

Anthracene Chrome Blue; Cassella Color Co., 182 Front St., New York City.

Ten samples showing dyeings made with different percentages of Anthracene Chrome Blue BW and RRW on loose wool, yarn, piece goods and slubbing.

Sulfur Black A W; Berlin Aniline Works, New York City.

One sample of cotton yarn and one of cotton piece goods dyed with Sulphur Black A W Extra, for which full working directions are given.

Guinea Fast Violet 10 B; Berlin Aniline Works, New York City.

One sample of woolen yarn and one of woolen piece goods showing 2 per cent. dyeings of Guinea Fast Violet 10 B.

Dyeings Fast to Washing on Silk; Cassella Color Co., New York City.

A card showing sixteen samples of silk yarn dyed with Immedial colors by a patented process that renders them fast to washing.

Immedial Indogene G C L Conc.; Cassella Color Co., New York City.

A folder showing two samples of raw cotton, two of cotton yarn and two of cotton piece goods dyed with different percentages of Immedial Indogene G C L Conc., for which full directions are given.

Diamine Fast Scarlet; Cassella Color Co., New York City.

A card showing ten shades of the Diamine Fast Scarlets, G B, B B, and 4 B, on raw cotton, cotton yarn and cotton piece goods. One of the samples has been cross dyed with Alizarine Black.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 113.

Pink on Worsted Yarn.

Xylene Red B on worsted yarn. Prepare the dye bath with

2 lbs. Xylene Red B.
(Walter F. Sykes & Co., 85 Water St., New York City.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter yarn at 160° F., bring slowly to a boil and dye at a boiling temperature for one hour.

Xylene Red B possesses all the properties of Rhodamine, but is much faster to light, washing, fulling and sulphur bleach. It is recommended where a fast pink is desired, and a red that will combine well with other acid colors.

Recipe No. 114.

Violet on Worsted Yarn.

Acid Violet 4 R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Acid Violet 4 R.
(American Dyewood Co., 154 William St., New York City.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter yarn at 170° F. and dye at a boil for one hour.

Acid Violet 4 R is not only an excellent color for wool dyeing, but will be found valuable in the dyeing of silk.

Recipe No. 115.

Blue on Worsted Yarn.

Wool Fast Blue G L on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Wool Fast Blue G L.
(Continental Color & Chemical Co., 128 Duane St., New York City.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter yarn at 150° F. and dye at a boil for one hour.

Wool Fast Blue G L dyes evenly and produces an excellent shade of blue.

Recipe No. 116.

Red on Cotton Yarn.

Rosanthrene R on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Rosanthrene R.
(A. Klipstein & Co., 122 Pearl St., New York City.)
25 lbs. Glauber's Salt.
3 lbs. Soda Ash.
5 lbs. Soap.

Enter yarn at 180° F. and dye at a boil for one hour, then rinse and diazotize by working for ¼ hour in a cold bath made up with

1½ lbs. Sodium Nitrite.
8 lbs. Hydrochloric Acid.

Then rinse and develop in a bath containing

1 lb. Beta Naphthol,

dissolved with

1 lb. Caustic Soda Solution 40° B.

Then wash and dry.

Rosanthrene R produces an even and bright red, possessing good fastness to washing.

Recipe No. 117.

Blue on Cotton Yarn.

Immedial Indogene G C L Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

Starting Bath.

16 lbs. Immedial Indogene G C L Conc.
(Cassella Color Co., 182 Front St., New York City.)
32 lbs. Sodium Sulphide Crystals.
5 lbs. Soda Ash.
40 lbs. Common Salt.

Subsequent Bath.

8 lbs. Immedial Indogene G C L Conc.
(Cassella Color Co., 182 Front St., New York City.)
16 lbs. Sodium Sulphide Crystals.
1 lb. Soda Ash.
10 lbs. Common Salt.

Enter at 120° F. and dye for one hour at a temperature not exceeding 140° F., squeeze well, rinse and dry.

By the addition of glucose (about an equal weight as of dyestuff) somewhat darker dyeings are obtained, while redder and brighter shades result from exposure of the goods to air after dyeing. If the temperature is too high the dyeings become greener and flatter.

An after-treatment with bichromate of potash and copper sulphate renders the dyeings somewhat fuller and still further improves their fastness to light and washing.

Immedial Indogene G C L Conc. possesses excellent fastness to washing, light and acids, and the clear greenish shade that it produces makes it very desirable.

Recipe No. 118.

Black on Cotton and Wool Union Cloth.

Zambesi Black B H on 100 lbs. cotton and wool union cloth. Prepare the dye bath with

6 lbs. Zambesi Black B H.
(Berlin Aniline Works, 213 Water St., New York City.)
1 lb. Soda Ash.
30 lbs. Common Salt.

Enter at 140° F., bring to a boil and dye at a boil for one hour, then wash and diazotize and develop by working for 15 minutes in a cold bath containing

3 lbs. Sodium Nitrite.
10 lbs. Hydrochloric Acid.

Then squeeze or rinse slightly and develop by working for 15 minutes in a cold bath containing

1½ lbs. Meta Toluylene Diamine Base.
6 lbs. Soda Ash.

Zambesi Black B H, when diazotized as above, gives a black of excellent fastness. It should be noted that whereas this dyestuff colors the cotton perfectly it scarcely stains the wool even at a boil, a fact of much importance in the production of certain color effects upon union cloth. (Compare with Recipe No. 102 in the July issue.)

Recipe No. 119.

Black on Woolen Cloth with Cotton Stripin Threads.

Acid Black R S on 100 lbs. woolen cloth. Prepare the dye bath with

6 lbs. Acid Black R S.
(Read Holliday & Sons, 7 Platt St., New York City.)
2 lbs. Sulphuric Acid.

Have the material well wet out and enter cold, raise the bath slowly to a boil and then add

2 lbs. Sulphuric Acid.

Boil until the cotton is clear. If the cotton is not white enough add two more pounds acid and boil fifteen minutes longer. Wash and dry.

Recipe No. 120.

Light Blue on Cotton Yarn.

Direct Blue 6 G on 100 lbs. cotton yarn. Prepare the dye bath with

¼ lb. Direct Blue 6 G.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston, Mass.)
10 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Direct Blue 6 G dyes perfectly level, is exceedingly fast to washing and fairly fast to light.

Recipe No. 121.

Red on Worsted Yarn.

Union Fast Red F on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Union Fast Red F.
(C. Bischoff & Co., 88 Park Pl., New York City.)
2 lbs. Acetic Acid.
30 lbs. Glauber's Salt.

Enter yarn at 140° F., bring to a boil and dye at a boil for one hour.

Union Fast Red F is an even dyeing color, excellently suited to the dyeing of cotton and wool union cloth.

Recipe No. 122.

Black on Cotton Cloth.

Zambesi Black B H on 100 lbs. cotton cloth. Prepare the dye bath with

6 lbs. Zambesi Black B H (10 lbs. Starting Bath.)
(Berlin Aniline Works, 213 Water St., New York City.)
1 lb. Soda Ash.
30 lbs. Common Salt.

Dye at a boil for one hour, then rinse and diazotize by working for fifteen minutes in a cold bath made up with

3 lbs. Sodium Nitrite.
10 lbs. Hydrochloric Acid.

Then squeeze or rinse slightly and develop by working for fifteen minutes in a cold bath containing

1½ lbs. Meta Toluylene Diamine Base.
6 lbs. Soda Ash.

Zambesi Black B H produces a black of excellent fastness upon cotton and its properties are such that it will be found very useful in the dyeing of union goods. See Recipe No. 118. (Compare with Recipe No. 106 in the July issue.)

Recipe No. 123.

Black on Woolen Cloth with Cotton Striping Threads.

Acid Black B S on 100 lbs. woolen cloth. Prepare the dye bath with

6 lbs. Acid Black B S.
(Read Holliday & Sons, 7 Platt St., New York City.)
2 lbs. Sulphuric Acid.

Enter the well wet out material cold, raise to a boil very slowly and then add

2 lbs. Sulphuric Acid.

Boil until cotton is clear. If cotton is not white enough add 2 lbs. more of acid and boil fifteen minutes longer. Wash and dry.

Recipe No. 124.

Scarlet on Cotton Yarn.

Diamine Fast Scarlet G B on 100 lbs. cotton yarn. Prepare the dye bath with

2½ lbs. Diamine Fast Scarlet G B (Standing Bath.)
(Cassella Color Co., 182 Front St., New York City.)
½ lb. Soda Ash.
20 lbs. Glauber's Salt.

Enter yarn at 180° F. and dye at a boil for one hour.

Diamine Fast Scarlet G B is distinguished by its very good fastness to washing and acids, and also by its fastness to light, which is superior to the ordinary direct cotton reds.

In union dyeing it has the advantage of staining the wool but little, and is at the same time sufficiently fast to acids to permit of cross dyeing with acid colors in an acid bath with the addition of 5 to 10 lbs. of alum.

Recipe No. 125.

Red on Cotton and Wool Union Cloth.

Union Fast Red F on 100 lbs. union cloth. Prepare the dye bath with

4 lbs. Union Fast Red F.
(C. Bischoff & Co., 88 Park Pl., New York City.)
20 lbs. Glauber's Salt.

Enter material at 120° to 130° F. and dye at this temperature until the cotton is well dyed and then bring to a boil and dye until both cotton and wool are equally colored.

Union Fast Red F will give very even dyeings which possess very good fastness to light and washing.

Recipe No. 126.

Red on Worsted Yarn.

Brilliant Alizarine Red on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Brilliant Alizarine Red.
(American Dyewood Co., 154 William St., New York City.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter yarn at 160° F. and dye at a boil for one hour.

Brilliant Alizarine Red is not only an excellent color for wool dyeing, but will be found valuable in the dyeing of silk.

Recipe No. 127.

Violet on Cotton Yarn.

Paranol Fast Violet B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Paranol Fast Violet B.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston, Mass.)
25 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Paranol Fast Violet B is exceedingly fast to light and acid, and dyes very evenly.

Recipe No. 128.

Black on Cotton Yarn.

Pluto Black SS Extra on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Pluto Black SS Extra.
(Continental Color & Chemical Co., 128 Duane St., New York City.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter yarn at 180° F. and dye at a boil for one hour.

The dyeing produced in this way can be after-treated with bichromate of potassium or formaldehyde, or can be diazotized and developed.

Pluto Black SS Extra, when dyed directly, possesses excellent fastness to light and when after-treated or diazotized and developed, the fastness to washing is very good.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Connecticut, Meriden. The Meriden Braid Co. will start operations about August 1st, making fancy braids, dress trimmings and woven goods This company is capitalized at $50,000, with Benj. W. Collins, president; Horace W. Kingsley, treasurer and Wm. D. Harned, superintendent. Product will be sold direct.

*Missouri, Kansas City. It is expected that operations will start in the early fall in new plant under construction for the Kansas City Cotton Mills. This plant will be equipped with 10,000 spindles. William Peet is president of the company, Witten McDonald, vice president and E. E. Holmes, secretary and treasurer.

*New York, Le Roy. Work is progressing on the new buildings under way for the Le Roy Cotton Mills. As previously reported this plant will be in operation about October.

*New York, Utica. The new building to be erected by the La Tosca Knitting Co. and Mohawk Valley Cap Factory and to be operated as the La Tosca Yarn Mill, will be equipped with 10,000 spindles for making combed yarns, in sizes from 9 to 30s inclusive.

*North Carolina, Bessemer City. Work is under way on erection of a new mill for the Crescent Mills, Inc., reported incorporated recently with capital stock of $150,000. C. A. Davis is president of the company and C. E. Whitney, treasurer. They will equip the plant, for making 40s two ply yarns, with 3,000 spindles. Steam power will be used. Have not yet made any machinery purchases.

*North Carolina, Cherryville. At meeting held recently by the stockholders of the Melville Manufacturing Co., W. A. Mauney was elected president; D. A. Rudisill, vice president and M. L. Rudisill, secretary and treasurer. Work will start at once on erection of the new buildings, which they contemplate having completed January 1st. From 3,000 to 5,000 spindles will be installed at first, for making yarns.

*North Carolina, China Grove. The new plant of the Patterson Mfg. Co. (Mill No. 3) and the new Cannon Mill, will be located in a new town to be called Cannopolis.

*North Carolina, Gastonia. The Clara Manufacturing Co. has awarded contract for erection of the new mill. The capital stock is now placed at $100,000. A new building 267 by 80 feet will be built and 5,000 spindles installed for making fine yarns. This is plant of which R. P. Rankin is president; Geo. A. Gray, vice president and C. M. Armstrong, secretary and treasurer.

*North Carolina, Louisburg. James W. Hollingsworth is president and manager of the Tar River Manufacturing Company, recently incorporated with capital stock of $20,000. R. G. Allen, treasurer.

*North Carolina, Lowell. The new plant of the Peerless Manufacturing Company will be put in operation about January 1st, making 40 to 60 yarns. This mill will have an equipment of 10,000 spindles and will be operated by electricity. Jno. C. Rankin is president of the company and superintendent and S. M. Robinson, treasurer.

*North Carolina, Matthews. The Matthews Manufacturing Co., which has been reported incorporated, in a recent issue at Charlotte, proposes establishing a plant at this place. E. J. Heath, T. J. Renfrew and J. M. Barrett are among those mentioned as interested.

*North Carolina, Roxboro. The new mill to be erected by the Roxboro Cotton Mills, which have recently increased capital to $180,000 for purpose, will be called the Longhurst Cotton Mill. They expect to have same running within a year, making 30/2 and 8/3 yarns for the market, with equipment of 10,000 spindles. They have not yet contracted for anything, beyond some of the brick.

*North Carolina, Selma. Contract will soon be awarded for erection of new buildings for the Lizzie Cotton Mills, to be equipped with 10,500 spindles for making yarns. M. C. Winston is president of the company, D. B. Oliver, vice-president, and L. D. Debnam, secretary and treasurer.

*Oklahoma, Guthrie. The Pioneer Cotton Mills, capitalized at $150,000, have started work on erection of their new mill, which they propose having in operation about December. L. N. Beattles is president of the company, Robert Sohlberg, treasurer, and J. E. Douglas, general manager and buyer. They will manufacture twine, rope, sash cord, etc., with equipment of 2,040 ring spindles. The machinery will be installed by the Lowell Machine Shop.

Pennsylvania, Philadelphia. Thomas Davies, formerly with the Davies Textile Co., Frankford, has temporarily fitted up a small corrugated iron building in the rear of the Burnada Mills, Orthodox and Large streets, Frankford, with machinery for the manufacture of upholstery goods and tapestries. It is reported that when suitable and larger quarters are found he will start up on a larger scale.

Rhode Island, Pawtucket. Ground has been broken for a new plant to be erected and to be known as the Burgess Mill, of which Robert Burgess (Pawtucket) will be treasurer. They propose making the finest combed yarns and cloths and expect to have the buildings completed by Dec. 1st. The new weave shed will be 318 by 252 feet, spinning mill, 467 by 101 feet, brick, three stories.

*South Carolina, Pickens. Contract has been let for the erection of the Dickens Cotton Mills.

*Tennessee, Nashville. Work will start Sept. 1st on installing the new machinery in the Warioto Cotton Mills, which will be ready to start operations about Jan. 1st. This plant will be equipped with 20,000 spindles and 500 looms, and will be located in what was known as the No. 2 mill of the Tennessee Mills plant.

Enlargements and Improvements.

*Alabama, Huntsville. The Abingdon Mills, which have been incorporated with capital stock of $150,000, to operate the Madison Cotton Mills, have started operations, making 8 to 11 oz. duck, with equipment of 18,328 ring spindles and 500 looms. They will add 3 pickers, 20 cards, 4 fly frames, 12 dry twisters, a spooler and slasher and machine shop equipment and condensing plant. The product is sold through Wm. L. Barrell Co., New York.

Alabama, Livingston. At meeting held recently by the directors of the Livingston Manufacturing Co., the capital stock was increased from $50,000 to $100,000.

*Connecticut, Moosup. The new weave shed for the Aldrich Mfg. Co. has been completed and work has begun installing the machinery; 510 new Whitin looms will be put in, also 20 cards, 2 speeders, 6 combers and 7,500 ring spindles.

Connecticut, Packerville. The Cutler Mills Co. have added 10 new Knowles looms.

Connecticut, Uncasville. An addition is under way to the Uncasville Mfg. Co.'s office building. They have also added 20 new Draper looms and installed a 750 H. P. engine.

Connecticut, Willimantic. The Windham Mfg. Co. has recently completed installing a new water wheel, replacing old looms with 40 new ones, adding 9 new cards and making some general repairs.

Georgia, Athens. The Star Thread Mill has placed order for 4,000 new spindles and carding and picker room machinery to be installed.

Georgia, Columbus. The Eagle & Phoenix Mills are to expend about $60,000 on new machinery, including about 16,000 additional spindles.

*Georgia, Dalton. Plans and specifications are being prepared for the new mill to be erected by the Crown Cotton Mills. There will be 12,000 spindles installed in the new plant.

Georgia, Jefferson. It is reported that the Jefferson Cotton Mills propose enlarging the plant and adding about 2,500 more spindles.

*Georgia, Monroe. Work will start this month by the Walton Cotton Mill Co. on erection of an addition to their plant. They will increase the machinery equipment from 5,000 spindles to 10,000 and looms from 156 to 316.

*Maine, Westbrook. The Dana Warp Mills have recently installed 5,000 new spindles, replacing old ones and also added 4,000 additional ones. They have recently built an addition, four stories, to the plant.

*Massachusetts, Easthampton. The Nashawannuck Company, reported to increase capital, will build an addition, 150 by 46 feet.

*Massachusetts, East Webster. It is expected that operations will start the first of the year in the new mill under construction at the Slater Cambric Mills.

Massachusetts, Fall River. Small Bros., manufacturers banding and rope, are making arrangements to build a two-story brick building, 76 by 39 feet, near present mill.

*Massachusetts, Housatonic. Contract has been awarded for the two additions, four and five stories, to be built to the Monument Mills.

*Massachusetts, New Bedford. The Bristol Manufacturing Corp., making combed cotton cloth, is installing 15,000 new mule spindles and 500 new looms. The original mill contained 50,000 ring spindles and 1,435 looms. Some of the old looms may be thrown out. The new machinery will be in operation by October 1st.

Massachusetts, Taunton. The Taunton River Mills have been incorporated with capital stock of $300,000 and will operate the Eagle Mills property, more recently known as the Watuppa Mills, which were never started. Work will start at once remodeling and building plant for making high grade ladies' dress goods, silk and fine cotton weaves. D. G. Dery (14 Greene St., New York) and Col. Peter H. Corr are actively interested in the new company.

*Mississippi, Columbus. The Columbus Yarn & Cordage Company is rebuilding the plant recently destroyed by fire.

*Mississippi, Laurel. The Laurel Cotton Mills have about completed work on the new addition 165 by 75 feet, two stories, and have started installing the machinery, doubling the equipment of the old plant, 10,400 spindles.

Mississippi, Tupelo. The Tupelo Cotton Mills are to double capacity of their plant. The hosiery mill building has been purchased and will be utilized for weaving.

New Hampshire, Manchester. An addition 30 by 33 feet, three stories, is being built to the bleachery at the Stark Corporation.

North Carolina, Durham. The Golden Belt Mfg. Co. is to make a large addition to the plant, almost doubling capacity.

Pennsylvania, Philadelphia. The Philadelphia Tapestry Mills have contracted with William Steele & Sons Co. for the erection of a one-story brick addition, 36 by 41 feet, to their boiler room on Mascher St., above Allegheny Ave., the cost to be $3,000.

Pennsylvania, Philadelphia. Richard Voit, proprietor of the Lindley Mfg. Co. now at Mutter St. and Lehigh Ave., where he is manufacturing curtains and gauze cotton goods, is removing the plant to the S. E. corner of Coral and Taylor Sts., where he will materially increase his capacity. He sells direct.

Pennsylvania, Philadelphia. Messrs. W. H. & A. E. Margerison & Co. are seeking a town in

which to locate their plant. A member of the firm was recently in Elkton, Md., for that purpose. The firm, however, states that at the present time they do not know what they will do, but if a suitable location can be secured the probability is that they will remove their plant, now located at Emerald and Sergeant streets, in which they manufacture Turkish towels and terry cloths on 50 broad and 48 narrow looms, to the town which offers the best inducements.

Pennsylvania, Philadelphia. J. Frederic Houston & Co., who have been making many changes and improvements to their mill at Cumberland, N. C., have recently put in a pair of horizontal turbine wheels supplied by the S. Morgan Smith Co., York, Pa., which will almost double their power plant. They manufacture cotton warps in skeins, tubes or cones, and report being very busy. The main office is in the Provident Building, 4th and Chestnut Sts.

*Rhode Island, Pawtucket. The Providence Braid Co., Providence, has made arrangements for their new mill to be erected at this place, and have awarded contract for erection. The new building will be 179 by 77 feet. It is expected that it will be ready for occupancy late in the fall.

*South Carolina, Anderson. Contracts have been placed for the new machinery to be installed in the H. C. Townsend Cotton Mill, doubling the present capacity, 2,280 spindles.

*South Carolina, Williamston. Work will start at once on erection of an addition for the Williamston Mills, to accommodate the new machinery previously reported to be installed (3,584 spindles and 100 looms).

Mills Shutting Down.

Maine, Westbrook. Operations have been suspended for the summer in the Westbrook Hammock factory.

North Carolina, Hope Mills. The four mills of the Hope Mill Mfg. Co.'s plant have been closed owing to trouble with the operatives, on account of employing Italian help, imported by them.

Tennessee, Trenton. The Trenton Cotton Mills have been closed. The management, finding that the property was not paying, decided to discontinue same.

WOOLEN.

New Mills.

*Connecticut, Putnam. We have been advised by Jere Emery, proprietor of the Pine Tree Worsted Mill, recently reported started, that at present he is only making a trial with a few Northrop looms. What the outcome will be will be decided later.

Massachusetts, Farnumsville. C. A. Root of Uxbridge, Edw. J. Brady, L. Bachman of New York, and others, who are interested in the mills at Uxbridge managed by Mr. Root, are organizing a new company with a capital stock of $300,000, to operate a weaving plant in the mill at this place, lately fitted up as a silk mill. The plant will be equipped with about 400 Draper looms, to manufacture cotton worsteds.

*Massachusetts, Lawrence. Work has been started on Section D of the new Wood Worsted Mill.

North Carolina, Winston. A new mill will be erected here by the Chatham Mfg. Co., of Elkin, for manufacturing high grade woolen blankets. The company has recently increased the capital stock to $350,000 for purpose of building the new plant.

*Pennsylvania, Philadelphia. The production of the new plant of S. W. Goldsmith, now being put in condition for operation in the O'Neill Mill, Oxford and Josephine streets, Frankford, will be cotton, woolen and worsted dress goods and men's wear, which he will turn out on 26 broad looms, selling direct. The superintendent of the plant will be Edward Andrae, well known to the textile trade as a former professor in one of the prominent textile schools in Germany and a writer of technical articles of great merit. The plant will be running within a few weeks.

*Pennsylvania, Philadelphia. The Landenberger Manufacturing Co., in which Charles H. Landenberger is interested, expects to have the new plant at Howard and Oxford Sts. in operation by September 1st. This plant will have an equipment of 50 broad looms for making dress goods.

Pennsylvania, Philadelphia. George Leather, formerly a member of the firm of Leather & Reimer, proprietors of the late Thalia Mills, in the Dale Mill, Frankford, has started up a small plant for the manufacture of woven railway waste at 1545 Ruan St. The machinery operated by him is of his own construction.

Pennsylvania, Philadelphia. Charles H. Landeberg has leased quarters at Columbia Ave., Turner and Howard Sts., and will install a plant for manufacturing dress goods. Expects to start operations about August 1st. Mr. Landeberg was formerly with F. A. Bockman & Co.

*Rhode Island, Pascoag. Work has been started on erection of the new mill to be occupied by Samuel Mellor and Paul A. Schwartz, who will operate same as the Hawthorn Worsted Company. The mill will be equipped with 40 looms and is expected to be in operation about January 1st. The main building will be 130 by 40 feet, two stories, with boiler house, 40 by 40 feet, two stories.

Enlargements and Improvements.

Connecticut, Baltic. The Shetucket Worsted Mills have recently added 15 new looms, a new press and a folding and measuring machine.

*Connecticut, Mystic. Contract has been let by the Mystic Woolen Company for the erection of a storehouse, 150 by 30 feet. The company has also added 25 new looms recently, replacing old ones.

Connecticut, Vernon. The Vernon Woolen Mills have been closed during the week to make repairs. A new smokestack is being set up.

*Maine, Dexter. The Wassookeag Woolen

Company expects to have the new addition, 42 by 42 feet, three stories, completed and ready for occupancy in about two months.

*Massachusetts, Adams. The Davies & Mahoney Spinning Company, now located at Pittsfield, is operating the Broadley Mill at this place, making yarns, 1 to 6 run. Plant is equipped with 6 sets cards.

Massachusetts, Clinton. Four new looms are being installed in the Litchfield Worsted Co.'s plant. W. J. Brodmerkle, president and manager.

*Massachusetts, Franklin. Operations will start early in September in the Franklin Yarn Company's new mill, some of the machinery having been received and installed.

Massachusetts, Lowell. Fifty additional Axminster looms have recently been installed in the Bigelow Carpet Company's plant.

Massachusetts, Otter River. The Templeton Woolen Mills at this place have been purchased by the Hamlet Mills, of Oakdale, Mass. The business will be removed to new location, where facilities will be greatly improved for manufacturing shoddies.

*Massachusetts, Plymouth. Twenty-four new looms have been installed in the new weave shed at the Puritan Mills, of the American Woolen Co.

Massachusetts, South Acton. A new mill, for which contract has been let, is to be built for the South Acton Woolen Co.

*Massachusetts, Spencer. The Taylor Woolen Company has purchased the Wicks Mill and is replacing the old machinery with new. At present only the weaving, carding and spinning rooms will be used, the finishing to be done at the mill now occupied by the Taylor Co. Simon Taylor is president of the company and Arthur Monroe, treasurer.

Minnesota, New Ulm. A company is being organized to have capital stock of $100,000, for purpose of operating the New Ulm Woolen Mills, to be removed from present location nearer the city. A new building will be erected and modern machinery installed.

*New York, Albany. Machinery is being installed in William Barnet's new mill at Rensselaer. It is thought that the plant will be in operation within a month.

New York, Amsterdam. Plans have been prepared for a large storehouse, 125 by 100 feet, seven stories, to be built for McCleary, Wallin & Crouse, manufacturers of carpets and rugs. Contract will be let shortly and work started.

*New York, Newburgh. When additions have been completed the capacity of the Stroock Plush Company will be about doubled. Work is now under way installing machinery in the new addition recently built.

*Pennsylvania, Bridgeport. William Barbour, reported to add additional machinery to his plant, expects to have same running by September. Will make worsted yarns, buying tops, 10s to 30s, and will add 1 set worsted machinery, 6 spinning frames and 3 twisting frames.

Pennsylvania, Philadelphia. The James Dunlap Carpet Company, 56th and Jefferson Sts., manufacturers of velvet and tapestry carpets and also owners of the mill at Indiana Ave. and A Sts., which they have equipped with looms for the manufacture of Axminster carpets, have filed plans for a three-story addition to the latter mill to be 61 by 50 feet, to cost $10,000.

Pennsylvania, Philadelphia. It is reported that F. B. Birch & Son, of the Franklin Spinning Mills, spinners of rug and carpet yarns, are to add worsted yarn spinning to the plant.

*Pennsylvania, Philadelphia. Messrs. Stearns & Castor, architects, have awarded the contract for the additions to the mills of Thomas Wolstenholme Sons & Co. at Frankford Ave. and Westmoreland Sts. to Henderson & Co. A two-story brick addition will be made to the shipping department of the mill and alterations to the old buildings. The work will be commenced at once.

Rhode Island, Washington. It is reported that the Elite Spinning Co. is to install considerable new machinery, including a new set of cards.

Virginia, Fredericksburg. The Melville Woolen Co., of which John C. Melville and William H. Duval are the owners, manufacturers of cassimeres, flannels, dress goods, overcoatings and novelties, with 4 sets, 2,556 spindles and 30 broad looms, dye and finish, are installing an extensive filtration plant with settling reservoirs, etc., supplied by the United Water Improvement Co., Phila., for the purpose of remodeling their entire water system.

Mills Starting Up.

Connecticut, Norwich. Operations have been resumed in the Clinton Mills Co.'s plant, closed since July 1, for making general repairs.

Pennsylvania, Philadelphia. Richard Hall, formerly connected with the Rock Hill Mills Co., West Manayunk, which was recently destroyed by fire, has leased the old dye house on Paoli Ave., Manayunk, which he has equipped with a new engine and boiler, 2 shredders, and will also put in 2 sets cards and 1 garnett machine for the purpose of manufacturing waste and shoddies. The plant is now partly in operation.

Mills Shutting Down.

California, Napa. The Napa Woolen Mills have been closed. The machinery has been sold to Stayton parties.

Connecticut, Wilsonville. Operations have been discontinued for an indefinite time in Lawrence Keegan's mill.

Massachusetts, Medford. The Medford Woolen Company closed the mill for a month. General repairs were made during the shut down.

Missouri, St. Joseph. The Buell Woolen Mills have been closed for the remainder of the summer. Operations will be resumed October 1st.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

New Jersey, Weehawken Heights. The Bodenmann Manufacturing Co. has been incorporated with capital stock of $100,000 for purpose of manufacturing laces and embroideries. The main office is at 231 Hackensack Road. Ernest A. Bodenmann, Conrad Teller and Otto Huetsch are interested.

New York, Gloversville. William Lefi & Co., 49 Yale St., dealers in gloves, have secured quarters at 94 Marshall Ave., which they will equip with machinery for the weaving of silk cloth to be used in the manufacture of silk gloves. They will employ 50 hands.

Enlargements and Improvements.

*Connecticut, South Manchester. Work is expected to be completed about the middle of July on the new dye house for Cheney Bros.

Massachusetts, Becket. Preparations are being made by the Berkshire & Becket Silk Company to install a number of spinners and braiders on the lower floor of the mill.

New York, Mt. Vernon. An addition 50 by 80 feet, brick, two stories, is being built to John G. Wintjen's braid mill. The building will also contain a fireproof vault for storing stock. Will add 75 braiders and other machinery. R. R. Kallman is superintendent of the plant.

Mills Starting Up.

*New York, Saratoga. The Clark Textile Co. contemplates starting operations in the new plant at this place August 1st.

MISCELLANEOUS.

Connecticut, Sterling. Work is well under way on the new mill for the United States Dyeing & Finishing Company's branch mill, the Sterling Dye Works, at this place. It is expected to have the new dye plant in operation by October 1st.

Massachusetts, Lawrence. It is reported that the Lawrence Dye Works, which have recently purchased additional ground, proposes erecting a new mill.

*Missouri, Kansas City. The United States Ramie Fibre & Manufacturing Co., incorporated with capital stock of $100,000, expects to locate their new plant in New Orleans, La. At first they will run a degumming plant and later will erect a yarn mill. They expect to start work on construction in about 90 days and start up on the plant about Jan. 1. J. Walter Farrar (Kansas City Stock Yards) is president of the company, Lemuel A. Murphy, treasurer, and John H. Marshall, buyer.

New Jersey, Paterson. The American Tracing Cloth Co. is a new concern which has leased the Bishop Mill at Riverside and will manufacture tracing cloth, from a new process. Operations will start August 1st.

Pennsylvania, Philadelphia. Messrs. Callaghan & Hey have recently started up a plant at 1729 Gilingham St., Frankford, for the beaming of plain and fancy warps. The machinery operated by them was formerly the property of Frank G. Bruey, who was located at 4155 Frankford Ave. Mr. Bruey is now employed by William Clark on Cedar St., above Margaret, manufacturer of damasks, as head of the beaming department of the mill, which contains 134 looms.

*Pennsylvania, Philadelphia. Work is nearly completed on a large addition to the main building of William H. Lorimer & Sons Company's plant.

Pennsylvania, Philadelphia. The contract for the erection of the one-story brick boiler house, 45 by 60 feet, at 4th & Somerset Sts., for John J. Campbell, bleacher, dyer and finisher of woolen and worsted piece goods, has been awarded to J. N. Gill & Co. The cost of the operation is estimated at $7,500.

*Pennsylvania, Reading. The Neversink Dye Works, Knoll & Althouse, Props., will erect two new buildings on Pear Street, for which permit has been secured. These buildings will replace plant destroyed by fire.

*Pennsylvania, Reading. The Prospect Dye Works proposes rebuilding their plant somewhere in the suburbs of the city and will erect several one-story buildings, instead of one large plant. They will erect a building on site of one destroyed and will rent same.

Rhode Island, Providence. The Foster Manufacturing Company has been incorporated with capital stock of $100,000, for the purpose of dyeing and bleaching yarns. Among those mentioned as interested are: John S. Murdock and John H. Slattery.

FAILURES AND SUSPENSIONS.

Alabama, Eufaula. The Chewalla Cotton Mills have been petitioned into involuntary bankruptcy. The creditors are represented by Hon. Charles S. McDowell, Jr. The liabilities of the concern are placed at $150,000, with assets of $120,000.

FACTS AND GOSSIP.

Alabama, Birmingham. We have been advised by Ike Adler, reported to have purchased the Birmingham Cotton Mills of the Southern Textile Co.'s plant, that he has not yet decided what will be done. He may instal new machinery for spinning cotton in addition to what machinery is already in the plant.

Alabama, Huntsville. The report is again revived that the Merrimack Mfg. Company is to establish a large finishing plant to be operated in connection with the other mills at this place.

*Alabama, Montgomery. Details have not yet been decided upon by Bert Weil, reported interested in establishing a cotton mill here.

*Arkansas, Mammoth Springs. We have been

advised that there is nothing tangible in the report concerning proposed cotton plant.

Connecticut, Glastonbury. The Crosby Manufacturing Co.'s plant at East Glastonbury has been sold to Angus Park, of Hanover. The new proprietor will take possession about September 1st. It is reported that Mr. Parks proposes organizing a stock company with Boston parties, to operate the plant.

Connecticut, Montville. The Spinning and carding departments of the Monarch Woolen Co. are being operated night and day.

*Georgia, Summerville. John D. Taylor of this place and Ralph H. Wilson, Lindale, are interested in the establishment of the proposed cotton mill at this place. A stock company will be organized with Mr. Taylor as president and Mr. Wilson, superintendent.

*Kansas, Topeka. The woolen mill is in operation with a night and day force.

*Maine, Houlton. The project of establishing a woolen mill at this place is being considered by a committee appointed for the purpose.

Maine, Rumford Falls. It is reported that a towel factory is to be erected by Virgin Bros. on the Isaiah Perkins property.

Massachusetts, Boston. The firm of Harding, Whitman & Co. will be continued under the same firm name, by William Whitman, Wm. Whitman, Jr., Charles L. Harding, Arthur T. Bradlee and Malcolm D. Whitman.

Massachusetts, Fitchburg. It is reported that the Parkhill Mfg. Co. proposes moving a wooden building, used as a storehouse, to make room for a new brick building, proposed, 250 by 160 feet, three stories high.

Massachusetts, Hingham. It is reported that a new woolen plant is to be established here and that William Coppin will be manager.

*Massachusetts, Lawrence. We have been advised by the Lawrence Duck Company, reported as considering an enlargement to the plant, that they do not anticipate making any additions this year.

Massachusetts, Lowell. The U. S. Bunting Co. is to erect a new plant during the summer. Work has begun removing four old buildings from the premises.

Massachusetts, Methuen The Wardwell Picker Company has been incorporated with capital stock of $17,000. A. A. Wyman and Arthur E. Shafter are mentioned as having an interest in the company.

Massachusetts, Millbury. Jno. P. Crane & Co. have given up business as dyers of cotton warps, and Mr. Crane has accepted a position with the Indian Orchard Co. at Indian Orchard, Mass.

*Massachusetts, Plymouth. The Plymouth Woolen & Cotton Co.'s property has been purchased by Eben D. Jordan. It is expected that the mill will be removed from the premises.

New Hampshire, Laconia. The Belknap Stocking Company has been reported organized with capital stock of $15,000.

Massachusetts, Spencer. The Joseph Wicks Mfg. Co.'s mill has been leased temporarily by the Taylor Woolen Co., where four spinning machines are being run on yarns.

*Mississippi, Wesson. A decree of sale of the Mississippi Cotton Mills has been issued by Judge Niles. This plant is now in the hands of a receiver. The sale is to take place before November 1st to satisfy a $300,000 mortgage given as security for a bond issue.

Missouri, St. Louis. The Texas Bag & Fibre Manufacturing Co. has been incorporated with capital stock of $100,000 for manufacturing fibre bags and other materials. Among those interested are the Messrs. J. S. and S. A. Bemis, St. Louis, and R. J. Wood, New Orleans.

*New Hampshire, Nashua. The Granite Overall Company has started operations making overalls, jumpers, long coats. This is a department of the Granite State Knitting Co.

New Jersey, Braddock. The Bailey & Steel Mfg. Co. is remodeling their entire plant into mill for making worsted cheviots and men's wear, using 2/40, 2/32 and 1/16 worsted yarns. They will discontinue the manufacture of novelty upholstery goods and curtains.

New Jersey, Newark. The John H. Meyer Company has been incorporated under New Jersey laws to dye and finish textile fabrics. Capital stock is placed at $50,000. Among those interested are Charles O. Geyer, Harry H. Picking and H. N. Smith of East Orange.

New Jersey, Trenton. It is reported that the Old Temperance Hall has been purchased by Albert Brandt and Isaac Goldberg for $100,000 and that a Japanese silk goods manufacturing plant may be installed.

New York, Albany. The R. J. Peterson Company has been incorporated with capital stock of $50,000 for purpose of manufacturing cotton goods. M. O. Peterson and G. A. Rhodes are reported as interested.

New York, Niagara Falls. The Niagara Falls Flax & Linen Company has been incorporated with capital stock of $400,000. Among those mentioned as interested are E. A. Wickes (New York) and F. E. Lovelace (Niagara Falls.)

New York, Oswego. The Swits Wool Co. has leased the wool pulling department of their plant for one year to John Siebert & Sons, formerly employed by the former company.

*New York, Fort Edward. The Standard Textile Company has been incorporated with capital stock of $25,000 for manufacturing textile goods. W. A. Huppuch (Sandy Hill) is president of the new company; W. M. Haskell (Glenn Falls), vice president; J. Irving Fowler, secretary and Walter W. Clark, treasurer and general manager.

North Carolina, Charlotte. The Matthews Manufacturing Co. has been reported incorporated with capital stock of $125,000 for promoting and operating cotton mills. E. J. Heath and J. M. Barrett are mentioned as interested.

North Carolina, Liledoun. The Watts Manufacturing Company has been incorporated with

capital stock of $100,000. This company has recently secured and is operating the plant formerly known as the Moore Cotton Mills. J. Walter Watts, O. L. Hollar and Charles P. Matheson are the incorporators.

*North Carolina, Louisburg. The Tar River Manufacturing Company has been incorporated with capital stock of $20,000. Among those mentioned as interested are Robert G. Allen, Harriet F. Allen and James W. Hollingsworth.

*North Carolina, Matthews. The Matthews Mfg. Co., reported incorporated to operate a cotton mill at this place, will not do so, but will run a large ginnery and fertilizer plant. The fertilizer plant will have capacity of 100 tons daily and will be in operation by first of the year.

North Carolina, Statesville. It is stated that A. B. Saunders is seeking site at this place upon which to erect a new cotton mill. Local capital will be interested in the project.

North Carolina, Willardville. The Little River Manufacturing Company has been incorporated with capital stock of $100,000 for purpose of manufacturing yarns and cotton goods. Among those mentioned as interested are A. G. Cox and J. S. Manning of Durham.

Ohio, Columbus. The Whittkamper Woolen Company has been incorporated with capital stock of $50,000. Walter J. Moser and F. H. Whittkamper are interested.

Ohio, Tiffin. It is reported that the Tiffin Woolen Mills, which have been idle for some time, are to be taken by the Marshall Field Co. of Chicago and used by them as a distributing centre. The machinery will be shipped to a mill in Illinois.

Ontario, Blakeney. The Blakeney Woolen Co. has been incorporated with capital stock of $40,000, for manufacturing woolen goods, etc. J. Coxford, J. G. Forgie (Pembroke), and J. E. H. Barnet (Renfrew) are mentioned as interested in the project.

Ontario, Hamilton. The Canadian Axminster Co., with a capital of $50,000 has been incorporated for the manufacture of carpets, rugs, etc. The directors are A. F. Hatch, R. B. Bruce and J. L. Counsel, all of Hamilton.

Pennsylvania, East Greenville. The Columbia Silk Mills with an equipment of 33 narrow looms and 240 spindles, are running full time on ribbons for which they have received many orders. This concern like the Eureka Ribbon Co., which is about one half mile from Pennsburg, has for its president A. S. Schantz and reports being very busy.

Pennsylvania, Pennsburg. The Eureka Ribbon Co., of which A. S. Schantz is the president, reports being very busy on ribbons operating 33 looms. They employ about 75 hands and state they have as much business as they can attend to.

Pennsylvania, Philadelphia. Dewhirst & Broadbent's Waverly Worsted mills, at Main St. & Green Lane, Manayunk, in which they manufactured worsted yarns on 2,000 spindles, was sold by the Executor of the estate, at public auction on July 25, the purchaser being A. Patchett, 248 Chestnut St., for the sum of $1,800. Mr. Patchett states at this time he does not know what disposition will be made of the plant. Mr. Broadbent, the junior partner of the late firm, is now employed by Thomas Wolstenholme Sons & Co.

Pennsylvania, Philadelphia. Messrs. W. H. & A. E. Margerison have been appointed receivers of the Margerison & Struth Mfg. Co., located on Arizona Street below Emerald, manufacturers of Turkish towels, damasks, velvour plush, terry cloths and jacquard novelties on 7 wide and 39 narrow looms. The plant is now running off the raw stock on hand which, when finished, will be sold together with its equipment in order to satisfy their creditors, who have agreed to accept a settlement of 50 cents on the dollar on account of their claims.

Pennsylvania, Philadelphia. Alfred Clegg, formerly connected with Edward Clegg's Sons, manufacturers of wool shoddies at Howard and Berks Sts., has opened up an office in the Mariner & Merchant Bldg., 3d and Chestnut Sts., where he is carrying on a business as broker and manufacturers' agent, for the sale of shoddies, wastes and rags on commission.

Pennsylvania, Philadelphia. A charter has been asked for by Samuel R. Boggs, George W. Boggs and Joseph M. Steele for the Thomas Boggs & Sons Company. This concern is now doing business under the name of Thomas Boggs & Sons, operating the Model Carpet Mills at 2d St. and Allegheny Ave., with 83 looms on ingrain carpets.

Pennsylvania, Philadelphia. S. W. Goldsmith is reported to install looms in the O'Neill Mill, Oxford and Josephine Sts., for making men's wear.

Pennsylvania, Philadelphia. The partnership existing between Cornelius Sullivan and Henry L. Webster, trading as the Valkone Dye & Finishing Works, has been dissolved by mutual consent. The business will be continued by Cornelius Sullivan.

Pennsylvania, Philadelphia. The contract for repairing the fire damage to the mill of William O'Neill at Oxford and Josephine Sts., Frankford, has been given out. The cost is placed at $1,000.

*Pennsylvania, Philadelphia. Messrs. Gilbert & Johnson, 125 Herman St., Germantown, manufacturers of high grade bathing suits, sweaters, jackets, etc., who started up about three months ago, state that their samples have been placed on the market and orders coming in. They also say that the firm name is to be changed on August 1st to J. D. Gilbert & Co., and the name of the mill to be called the Atlas Knitting Mills, after the brand of goods which they manufacture. The plant is to be equipped with 18 machines to be run by gas.

Rhode Island, Central Falls. It is stated that the mills of the Farwell Worsted Company (bankrupt), will be closed as soon as the present stock is used, which will be about August 1st. It was at first thought that the plant would be operated by the receiver for the benefit of the creditors, but this has not been found advisable.

Rhode Island, Fiskville. A report, not verified, states that the B. B. & R. Knight company propose erecting a large cotton mill between the villages of Fiskville and Jackson and that the old mills at this place will be torn down.

Rhode Island, Pascoag. It is reported that Paul Schwartz of Harrisville and Samuel Mellor, propose starting a new woolen mill at this place.

Rhode Island, Providence. It is reported that contract has been let for a new mill to be erected at the Riverside plant of the American Woolen Company. The new building will be 293 by 80 feet, three stories and will be used for spinning and weaving purposes. An addition will also be made to the winding room of the present mill.

South Carolina, Fork Shoals. A special meeting of the stockholders of the Fork Shoals Cotton Mills will be held on August 7th to consider increasing the capital stock. Important additions and improvements will probably be made.

*Vermont. Quechee. It is the J. C. Parker Co.'s mill at this place and not the Dewey Mills, that have been purchased recently by A. G. and R. L. Parker, of Penacook, N. H. The mill will be operated as the J. C. Parker Co., with capital stock of $100,000; R. L. Harris, president and agent; A. G. Harris, treasurer and Clarence A. Davis, superintendent. This mill is equipped with 7 sets cards and 34 broad looms, making white flannels and dress goods.

Virginia, Independence. C. E. Lundy of this place is reported as interested in organizing a company to erect a woolen mill, driven by electricity.

Virginia, Petersburg. Werres & Hinton, operating a dyeing plant, have been incorporated as the Werres & Hinton Silk Dye Works, with a capital stock of $50,000 minimum and $200,000 maximum. H. P. Stratton is president of the company, John H. Werres, vice president and general manager and F. H. Heineman, secretary and treasurer.

Personals.

Walter M. Lamont has been appointed superintendent of the worsted department of the Wood Worsted Mill, of Lawrence, Mass.

J. E. Allen, overseer of ring spinning in the Harmony Mills, of Cohoes, N. Y., has resigned.

Patrick Dwyer has resigned as overseer of spinning and twisting in the Woonsocket Worsted Mills, of Woonsocket, R. I.

E. L. Hersom, superintendent of the Fitchburg Duck Mills, of Fitchburg, Mass., has resigned and has been succeeded by D. A. Everly, of Pawtucket, R. I.

Merton Berry, overseer of carding for the Enfield Mfg. Co., Enfield, Mass., has severed his connection with that mill.

George E. Elliott, formerly of the York Cotton Mills, of Saco, Me., has resigned to take a position as overseer of spinning at the Monadnock Mills, of Claremont, N. H.

James Green, a recent graduate of the New Bedford Textile School, has been promoted to overseer of weaving in Hathaway Mill No. 2 of New Bedford, Mass.

C. E. Hartley, overseer of carding for the Halifax Cotton Mills, Halifax, N. S., has resigned to take a more responsible position.

Patrick Lappin has resigned as overseer of dyeing for the Saylesville Bleachery, of Pawtucket, R. I., and is succeeded by A. Bryson, of North Adams, Mass.

Frank Burns, overseer of bleaching for the Barrowsville Bleachery, has resigned his position to take a similar position in Providence. He is succeeded by William Darrell, formerly second hand.

Thomas Cooper has resigned as overseer of carding for the Tecumseh Mills of Fall River, Mass. and will retire from the business.

Paul A. Schwartz, superintendent of the Glen Worsted Mills, of Harrisville, R. I., has resigned his position and it is reported that he is thinking of going into business for himself.

Joseph W. Guild, for many years overseer of carding in the Anory branch of the Amoskeag Mfg. Co., of Manchester, N. H., has resigned his position. He is succeeded by Fred A. Downs, who has also been with the Amoskeag Mills for many years.

P. F. Reilly, who has held the position as overseer of finishing for the C. A. Root Co., of Uxbridge, Mass., for the past eleven years, resigned his position Saturday, June 23d. The help employed under Mr. Reilly presented him with a handsome gold chain and an Odd Fellows' and Eagle's charm.

Henry Cole has taken a position as overseer of finishing with the Davis & Brown Woolen Co., of Uxbridge, Mass.

William J. Underwood, formerly with the Parker and Hargraves mills, of Fall River, has taken a position with the King Phillip Mills of that city.

John Bonner, superintendent and designer of the Shirreffs Worsted Co., of Fitchburg, Mass., has taken a position with the Waterloo Woolen Co., of Waterloo, N. Y., as superintendent.

Joseph Charlesworth, formerly in the setting up department of the Davis & Furber Co., is now superintendent of the Central Yarn Co., of Central Village, Conn.

George Parent, formerly overseer of spinning at the Whipple Mill, in Oakland, R. I., now holds a similar position with the Central Yarn Co., of Central Village, Conn.

George Egan, overseer of finishing for the Moosup Mills, Moosup, Conn., has been granted leave of absence on account of sickness. His place

will be filled during his absence by W. S. Green of Worcester, Mass.

Royal White, who was designer and assistant superintendent of the Stirling Mills of Lowell, Mass., resigned recently to take a position as agent and general manager of the Brighton Mills of Passaic, N. J.

Warren Lucas, formerly with the Morrison Woolen Co. of Dexter, Me., has taken the position as overseer of carding and spinning for the Amos Abbott Co. of North Dexter, Me.

T. H. Tobin, formerly overseer of finishing for G. Murdock & Son, New Boston, Conn., has taken charge of finishing for the Morrison Woolen Co. of Dexter, Me.

R. T. Robinson, superintendent of the Concord Mills, Concord Junction, Mass., has resigned and is succeeded by Howard S. Wood. Mr. Robinson has taken up the electrical business in Brooklyn, N. Y.

M. E. Stevens has resigned as superintendent of the People's Cotton Mills in Montgomery, Ala., and is succeeded by J. M. Foster of Lawrence, Mass. Mr. Stevens goes to Columbus, Ga., where he will be superintendent of the Columbus Mfg. Co.

James B. Fagan, former designer for the Hinsdale Woolen Co. of Hinsdale, Mass., has resigned and gone to Fitchburg, Mass.

Mr. McVicar of Valleyfield, Que., has taken the position as overseer of finishing for the Boston Duck Co. of Bondsville, Mass., succeeding John Convery, resigned.

Arthur Dickinson, superintendent of the Pocasset Mill No. 5 has resigned. Mr. Dickinson has another position in view, which he will take after a month's vacation.

Jerry Haley, overseer of dyeing for the North Dexter Woolen Co. of Dexter, Me., has accepted a similar position with the Terry Mfg. Co. of Waterville, Me.

Lloyd A. Gilbert, overseer of carding for the Blackstone Mfg. Co. of Blackstone, Mass., has tendered his resignation.

E. P. Barker, formerly with the Merrimack Woolen Co. of Lowell, Mass., has accepted a position as superintendent for the James J. Regan Mfg. Co. of Rockville, Conn.

John H. Begley has accepted a position with the J. R. Montgomery Co. of Windsor Locks, Conn.

Harry Balcomb of East Douglas, Mass., has accepted a position as overseer of carding for the Meriden Woolen Co. of Meriden, Conn.

Peter Ostigney of Salmon Falls, N. H., has taken a position with the Dwight Mfg. Co. of Chicopee, Mass.

Fred G. Wilman of Lawrence, Mass., has accepted the position as overseer of dyeing for the Rochester Woolen Co. of Rochester, N. H.

George Pettengill of Bound Brook, N. J., has accepted a position as overseer of finishing for the James J. Regan Mfg. Co. of Rockville, Conn.

Chas. R. Harmon, formerly overseer of carding and spinning at the Lancaster Cotton Mills, Lancaster, N. C., has taken the position as superintendent of the Lula Mfg. Co. of King's Mountain, N. C. Mr. Harmon is succeeded at Lancaster by John Enloe.

J. F. Cunningham, formerly of Millen, Ga., has been appointed superintendent of the cotton department of the Knoxville Woolen Mills, Knoxville, Tenn.

Orin F. Bennett, for a number of years overseer at the Naumkeag Steam Cotton Co., has been appointed superintendent over the entire plant, a position recently created.

Richard C. Bailey, overseer of finishing, has severed his connection with the Hudson Blanket Mills, of Hudson, Mass.

Halbert Parkhurst has resigned as superintendent of the Beoli Mills, of the American Woolen Co., at Fitchburg, Mass., to take a similar position in a woolen mill in Baltimore, Md.

Horatio Edgerly, formerly with the Chicopee Mfg. Co., Chicopee, Mass., has taken the position as overseer of carding for the Naumkeag Steam Cotton Mills, of Salem, Mass.

William J. Kearney, overseer of finishing for the Clinton Woolen Mfg. Co., has severed his connection with that firm and returned to Philadelphia.

F. H. Milnes, superintendent of the Central Yarn Co., of Central Village, Conn., has resigned and returned to his home in Pittsfield, Mass.

Robert Cameron, for many years in charge of the burling room in the Peace Dale Mfg. Co., has severed his connection with that firm.

Allen M. Osborne, formerly superintendent of the Weybossett Mills, of Providence, R. I., has taken a position with the Earnscliffe Worsted Mills, of Providence.

John J. Deavitt, overseer of weaving for the Talbot Mills, North Billerica, Mass., has resigned his position. He will take charge of a weaving plant to be started in Lowell in the near future.

Fred Hanson, who has been overseer of spinning for the past year, will sever his connection with that firm to take a position in Putnam, Conn.

John Mitchell, of the Arlington Mill, Lawrence, Mass., has taken a position as overseer in the Boott Cotton Mills, of Lowell, Mass.

Michael Berry has resigned his position in the cotton twisting department of the Arlington Mills, Lawrence, Mass.

Clark Faulkner, of South Royalston, Mass., has accepted a position as assistant overseer of carding in the Burlington Mills of Winooski, Vermont.

H. Reinhardt is succeeded by E. Langdon as overseer of weaving at the Berkley Mills, of Wales, Mass.

John Henderson, of Providence, R. I., is now overseer of weaving for the Sayles & Jenks Mfg. Co., of Warren, Mass.

John A. Heaton, formerly overseer of finishing for the Glen Woolen Mill, Norwich Town, Conn., now holds a similar position with the Monarch Woolen Co., of Montville, Conn.

James Henry, overseer of weaving for the Yantic Woolen Co., Yantic, Conn., is now in a similar position at the Airlie Mills, of Hanover, Conn.

Charles A. Betting has taken the position as overseer of finishing at the Glen Woolen Co., of Norwich Town, Conn., succeeding John A. Heaton, resigned.

Chas. M. Taylor, formerly with the Pemberton Co., Lawrence, Mass., has taken charge of dyeing at the Falls Co., Norwich, Conn.

Joseph Costello, formerly of North Adams, Mass., has taken a position as overseer of carding with the Airedale Mills, of Pittsfield, Mass.

Fred Coyle, who has been with the Clyde Print Works for a short term, has severed his connection with that mill, and James B. Foley has been appointed to succeed him as overseer of white finishing.

Ferdinand Heminway has resigned his position in the carding room of the Wauregan Company's plant to take a position as overseer with the Attawaugan Company, at Attawaugan, Conn.

Lee Rodman, of Louisville, Ky., has been appointed vice-president and general manager of the Indiana Cotton Mills Company, of Cannellton, Indiana.

W. A. Black, who has been superintendent of the Richland Cotton Mills, Columbia, S. C., has taken the superintendency of the Granby Mills, of the same city, succeeding J. E. Sharp, who has resigned on account of his health.

Harry Walker, formerly superintendent of the worsted yarn department of the Imperial Woolen Co., of Manayunk, Philadelphia, has taken a similar position at the Frank B. Birch & Son's yarn mill, in Philadelphia.

S. W. Mims, formerly overseer at the Olympia Mills, of Columbia, S. C., has succeeded W. A. Black as superintendent of the Richland Cotton Mills, of Columbia.

George D. Woolley, overseer of weaving for the Slater Cotton Co., of New Bedford, Mass., has taken a similar position at the Butler mills in the same city.

Ernest Maxfield has accepted the position as assistant superintendent of the Waverly Woolen Company, of Pittsfield, Me.

Martin J. Nelson, formerly overseer of finishing with the Progress Worsted Mills, of Ashaway, R. I., has taken a more responsible position with the National & Providence Worsted Mills, of Providence.

Ellery D. Smith, treasurer and general manager of the Riverdale Mills, of Great Barrington, Mass., has resigned his position to take a position as traveling salesman for a New York concern.

J. J. Cobb has taken the position as overseer of carding, succeeding Henry Schoenfield, who has resigned and taken a position with the Terry Mfg. Co., of Waterville, Me.

Deaths.

Nahum Harwood, president of the Leominster Worsted Co., and a prominent manufacturer, died at his home in Leominster, Mass., after several months' illness.

Isaac W. Lamb, president of the Perry Glove & Mitten Co., of Perry, Mich., and inventor of the Lamb Knitting Machine, died suddenly, July 13, aged 65.

Elbridge N. Harris, president of the Rodney Hunt Machine Company, Orange, Mass., died recently at his home in Malden, Mass., aged 77 years. He had been engaged in the manufacture of water wheels and textile machinery for more than fifty years. Previous to 1888 Mr. Harris lived in Lawrence where he conducted a water wheel and mill machinery business which extended throughout New England. This experience and the commercial standing thus acquired led to the merger of his business into the Rodney Hunt Machine Company at the time of its incorporation in 1873. He was one of the directors of the Rodney Hunt Machine Company and in 1882 was elected treasurer, which office he held until 1889, when he was elected president to succeed Mr. Hunt, deceased. This office he held at the time of his death. Mr. Harris was very active in the affairs of the company up to within the last two or three years. Associated with him in the business were his two sons, Nelson E. Harris, of Orange, who is and has been treasurer and superintendent since 1889, and William O. Harris, of Malden, who is secretary, and who has charge of the company's Boston office. Mr. Harris had for several years and until recently been a director of the Millers River National Bank of Athol. He was a deacon of the First Baptist Church of Lawrence for many years, and was a member of the First Baptist Church of Malden at the time of his death.

Elisha Adelbert Still, a member of the executive committee of the American Thread Co., died at the home of his brother in Holyoke, Mass. Mr. Still was 51 years old and a well-known resident of New York. He was born at West Willington, Conn. When but 15 years of age, he entered the employ of the Merrick Thread Co. and had since been associated with that concern serving with the company for 40 years. Mr. Still figured prominently in the formation of the American Thread Co. and since its organization and the merging of the Merrick Company had been one of the executive committee of the syndicate.

Henry Adams aged 69 years, a native of Adams, Mass., and for many years one of the most prominent residents and cotton manufacturers in Rockville, Conn., died at his home in Adams July 21st. The cause was heart failure. Mr. Adams was born in Adams in 1837. When a boy he attended the Adams public schools and leaving school went to work in his father's big cotton mill. He got a good knowledge of the business and then went to work in Pittsfield. He left Pittsfield and went to Indian Orchard where he became a manufacturer of cotton goods. He established the Adams Mfg. Co. in Rockville, Conn.

Heart disease caused the death of James W. Johnson, 86 years old, a retired yarn manufacturer living at Conshohocken Ave. and Rocky Hill Road, Cynwyd, Pa. Mr. Johnson was born in Carlisle, England. He came here before the Civil War and served in the Soldiers' Hospital at Hestonville during that period. He afterward engaged in cotton spinning in Manayunk, later establishing a factory in West Philadelphia.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The Official American Textile Directory for 1906-1907; compiled by the Textile World Record; 625 pages, 23 textile maps; office edition price $3.00; travelers' edition $2.00; Lord & Nagle Company, Boston, New York and Philadelphia, publishers.

The twelfth annual edition of this well-known work has been issued, and in many respects surpasses any of the preceding editions. The American Textile Directory, published for 30 years, and the oldest of all the directories, has been bought and merged with the Official Directory, the size of the latter being retained, as well as its special arrangement.

Among the new features are a directory of the textile establishments in Mexico, several new maps, the extension of some of the auxiliary lists of dealers and merchants having to do with the textile trade.

The special features of this directory are:

The very complete information which it gives about each establishment, as well as the accuracy of its reports.

The convenient system of arrangement, whereby all textile establishments in any one city or town are grouped together under that place so that it is not necessary to look in half a dozen different parts of the book to see that one has not overlooked any mills.

The copyrighted map features, which enable any town referred to in the text to be quickly located on the map, giving its railroad facilities, distance from other towns, etc.

The yarn trade index, which gives classified lists of manufacturers of different kinds of yarn who spin for the market, tells the size of yarn spun and the way it is put up.

The commission and order section, giving classified lists of establishments doing all sorts of dyeing, bleaching, finishing, mercerizing, etc., on order for converters.

Separate list of mills with worsted machinery for the convenience of those dealing exclusively with that branch.

Besides the features mentioned above there are many other separate lists and valuable features which must be seen to be appreciated. The book is ready for prompt delivery. The names of hundreds of new textile establishments are included in this edition which did not appear last year, and thousands of changes, including several hundred firms out of business, make the new book indispensable to those who are doing business with the mills.

The publishers of this directory being also publishers of the Textile World Record are enabled to utilize the extended reporting and news gathering facilities of their organization for the work of the directory, and are thus enabled to compile the statistics in a shorter space of time and with more thorough personal investigation than any other work of this character, bringing the information closer to the date of publication and insuring a high degree of accuracy.

The American Buyers' Directory of the Carpet, Upholstery and Interior Decorative Trade; American Carpet and Upholstery Journal; Philadelphia, Pa.; 144 pages, 6 by 9.

This, the second edition of the American Buyers' Directory, has been carefully revised. It gives a list of the manufacturers and wholesalers of interior furnishings in the United States, alphabetically arranged. There is also a classified list of firms grouped according to their respective branches of trade.

The Blue Book; Davison Publishing Co., 401 Broadway, New York; office edition $4.00; travelers' edition $3.00.

The 1906-1907 edition of this work has been issued and contains its usual features, comprising directory of the different textile manufacturing establishments in the United States and Canada, with lists of firms in auxiliary lines of business, and various classifications. In this directory the cotton mills, woolen mills, knitting mills, etc., are grouped together separately. Several new map plates have been prepared for this edition, which bears evidence of its usual careful preparation.

Decimal Coinage, Weights and Measures; by Edwyn Anthony, M. A., J. P.; 20 pages, 7 by 9 1/4; George Routledge & Sons, Broadway House, Ludgate Hill, London; price 50 cents.

This is a very clearly-written summary of the leading plans proposed for the improvement of British coinage, weights and measures. The author separates the question of currency from that of weights and measures, and thus avoids the mistake so often made of confusing the two problems and concluding that what applies to one is equally true of the other.

The reader will find a very impartial statement of the advantages and disadvantages of the various systems of coinage and cannot fail to be favorably impressed with the proposal that the present English penny shall be made the base of a new system and a new coin of 100 pence be issued, all other existing coins to remain in use as long as required. This plan would give Great Britain a decimal coinage without changing the established standard of value and make easy the transition to the decimal basis.

Under the head of weights and measures Mr. Anthony discusses the various plans for decimalizing existing units. He has no sympathy with the proposal to construct a new corelated system based on some British unit, and considers it more impractical than the introduction of the metric system. He is inclined to favor the plan of letting the existing units be divided and multiplied decimally, and allowing free choice in the selection of such British units as may be best suited for the work in hand.

The objections to introducing the metric system are stated forcibly and emphasis is laid on the great advantage of maintaining uniformity of weights and measures in Great Britain, her colonies and the United States. A wide circulation and study of this book would be very effective in dispelling the errors that metricites, led by the misnamed Decimal Association, have spread broadcast.

Manchester Royal Exchange Directory, 1906; compiled by Richard Collinson, Manchester, England; 504 pages, 4 1/2 by 7; price $2.50.

The body of this work consists of a list of the firms included in the membership of the Manchester Royal Exchange, stating the business, address, exchange and home telephone numbers, etc. Next comes an alphabetical list of the members and representatives of the firms to which they belong with the exchange pillar or square at which each will be found on the floor of the Royal Exchange. There is also an alphabetical classification of the different professions and trades represented, the whole forming a compactly printed volume of over five hundred pages, and being a very useful manual for the English cotton trade and striking evidence of its importance.

Business Literature.

Year Book for Dyers and Colorists; H. A. Metz & Co., New York City.

The eighth volume of this annual begins with a list of useful tables, which is followed by sections under the following titles: The Identification of Dyestuffs; Patents for the Year 1905; Notes on Process, New Colors, etc.; Educational; List of Dyestuffs, Makers and Methods; Miscellaneous Notes. An index enables ready reference to be made to the contents of the book, a copy of which should be in the hands of every dyer.

Catalogue of the Bradford Durfee Textile School, Fall River, Mass.

We have received a copy of the 1906-1907 catalogue of this school, which is freely illustrated with cuts showing the interior of the buildings. A feature that will commend itself to those desiring to make a specialty of cotton manufacturing is that the courses of instruction are confined as far as possible to that branch of the textile industry. In this way it is claimed that more thorough instruction and better training are obtained.

Cloth Finishing Machinery: Parks & Woolson Machine Co., Springfield, Vt.

A catalogue describing the latest types of cloth finishing machinery built by this well-known concern. The catalogue also contains excellent illustrations of the various types of machines.

Shear Book; Parks & Woolson Machine Co., Springfield, Vt.

This pamphlet gives an account of the Parks & Woolson shears and contains much information of value to finishers in regard to the care and running of cloth finishing machinery.

The Geo. L. Squier Mfg. Co., Buffalo, N. Y., have just issued a new catalogue of sixteen pages in which their rice machinery is described and illustrated. The book includes a number of new machines brought out within the last two years that have never before been catalogued. A copy will be sent on application.

Air Washer and Humidifier; Buffalo Forge Co., Buffalo, N. Y.

This pamphlet describes apparatus for purifying and humidifying the air. It is adapted for textile mills and capable of close adjustment.

Sponging Woolen Goods.

Most, if not all, of the processes included under the head of finishing involve more or less tension, and hence, before woolens are made up into garments, the stretching thereby unintentionally but unavoidably caused must be cancelled. In other words, the goods must be shrunk before the tailor's goose touches them. That will shrink them, but the shrinking will then be too late, and the skill of the cutter will be thrown away.

The process of effecting this shrinking at the proper stage is thus of great importance, and may fairly be regarded as the final step in the finishing of the goods. It has various names. It is called damping, dewing, or sponging, but the first of these appellations is the commonest—at least in this country. It is effected by moisture, sometimes, but rarely, accompanied by heat, and inasmuch as the main object of the damping is to remove the stretching incidental to the previous finishing, and to leave the cloth incapable of further contraction, it is evident that no more tension than is absolutely unavoidable may be applied during the damping operation.

On a small scale, there is no better method than that adopted by many tailors, viz., to cover the piece with a wet, but not dripping, piece of calico, and then to roll the two up together loosely, but without creases. In a few hours the wool will be perfectly shrunk. When we attempt, however, to apply this method on a large scale, and to pieces many yards in length, we are confronted with the difficulty that it is practically impossible to manage them without some amount of tension. The great weight of the goods is enough of itself to secure this, and, besides, compels us to handle them by the aid of mechanical power.

The points to be attended to in a damping or dewing machine are, therefore, to minimize as far as possible pressure and tension, and, except with very heavy close goods, in which the penetration of the water can be aided by steam, heat as well. Slow running of the machine is in every case essential, so that there is no more tug of the rollers on the cloth than is absolutely necessary, and it is also evident that all the rollers concerned must run at exactly the same speed. To ensure this, as many of them as possible should be turned simply by friction against the piece, and the others should all be geared to a uniform speed. Several damping machines have been built which fulfil their purpose as well as can be reasonably expected. These machines fall into three classes. In one, wet steam at the ordinary atmospheric pressure is employed, in the other two classes cold water is employed, and the difference between the two types is that in one the water is sprayed upon the goods to be shrunk, while in the other it is applied as the tailor applies it on a small scale. Every sort of machine has been patented over and over again, with or without modifications in the details of the apparatus.

Steaming machines are of two kinds. In one the goods travel by means of rollers through a chamber, through which the wet steam is also passing; in the other the cloth does not travel. It is merely wrapped round a hollow perforated cylinder through which the steam is passing.

In the spraying machines the points to be attended to are that the water must reach the cloth in the finest possible state of subdivision. No actual drops must on any account be allowed to touch the piece, and various contrivances are resorted to to prevent it. To make the goods travel at a respectable distance from the places where the spray is generated, and also above those places, is a precaution too obvious to have been overlooked. In other machines guard plates are set in such positions that only fine mist can get round them. In others, again, a fine wire gauze screen is placed between the goods and the water. A modification of the deflecting plate idea is to have a slotted plate instead of the wire screen.

The spraying itself is done on two distinct principles. In one type of machine the water is sprayed or atomized by a blast of air, usually supplied by a fan. There is, however, a machine in which the water issues from jets under its own pressure, and the spray is produced by arranging the jets in pairs, each of which consists of two jets set at an angle, exactly like the gas jets in some forms of acetylene burners. Thus the two jets of water impinge obliquely upon one another, and the impact scatters the water widely in the form of a fine mist.

The machines in which the water is sprayed by an air-blast, which is usually supplied by a fan, may again be divided into those in which the blast accompanies the water into the space next the goods, and those in which it does not. In the second type of spraying machine the water is scattered by centrifugal force, and almost every possible device for doing this has been adopted. In one of the earliest machines of the kind a cylindrical wire brush revolves on a horizontal axis which is parallel to the width of the piece of cloth. The brush revolves in a trough of water and casts the liquid into the air by doing so. The cloth travels horizontally at a height above the brush.

In other machines a paddle-wheel is substituted for a brush. In another, what revolves in the water is a plain wooden cylinder to which tubes of wire gauze are fixed for the purpose of throwing up the water. There is yet another in which water is fed into the interior of a cylinder rotating with a high velocity, so that it throws the water through the small holes with which it is liberally pierced in the form of fine spray. In all water-damping machines, the supply of water must be carefully regulated. When the air-blast is used this is done by means of the size of the nozzle, and in the brush and paddle machines by varying the immersion of the splasher. In the other form of machine the supply of water is controlled as it enters the apparatus.

The third class of damping machines imitates the tailor's procedure closely as we have seen. In one form a cylinder, wrapped in blanketing, revolves horizontally and dips into water. The cloth is supported horizontally, and just touches the top of the roller, over which it travels in a direction at right angles to the axis of the roller. In another machine the cloth to be damped passes between two rollers, both wrapped, the lower one dipping into a trough of water.

Whatever kind of damping machine is used it is of the utmost importance that the water used should be perfectly clean, and especially that it should be free from sediment of any kind. If the damping has been properly done, whether by hand or by machine, there is no need of any artificial heat for drying the goods. The shrinking having taken place, the tension caused in the piece by its own weight when it is hung up to dry does no harm.

Sponging has a secondary purpose in addition to the main one just discussed, viz., to remove the lustre and handle given by rotary presses. The rotary press imparts a characteristic feel and appearance which are undesirable of high-class goods, and they are both removed by an efficient damping.—R. Shawcross in the Dyer & Calico Printer.

Oil Engine Sales.

The De La Vergne Machine Company, New York, reports the following recent orders for "Hornsby-Akroyd" oil engines: Wheaton Seminary, Norton, Mass., 13 h. p.; P. R. Mfg. Co., Detroit, Mich., 50 h. p.; Rahr Brewing Co., Oshkosh, Wis., 32 h. p.; The Vitagraph Co., Brooklyn, N. Y., 25 h. p.; Regal Oil & Gas Co., Chicago, Ill., 65 h. p.; L. R. Wright, Pecos, Tex., 13 h. p.; Jas. H. Holden, Fall River, Mass., 75 h. p.; Borough of Souderton, Pa., 50 h. p.; James L. Breeze, Southampton, L. I., 35 h. p., direct connected to 25 k. w. generator.

A Great Labor Saver for Mills.

Special attention is drawn to the advertisement of Jno. E. Larrabee, of Amsterdam, N. Y., in this issue, regarding the portable hoist which he is furnishing to the textile mills of this country. It is designed especially for piling cases, bales and heavy packages and is in use in many of the representative mills of this country.

Mr. Larrabee will be very glad to send an illustrated circular to anyone interested in this subject. Some idea of its popularity can be had by glancing at the list of mills to which he has recently shipped it, and from which he has received a number of very gratifying letters. Quaker City Shirt Mfg. Co., Norristown, Pa.; Bibb Mfg. Co., Macon, Ga.; Millbank Bleachery, Lodi, N. J.; Union Wadding Co., Pawtucket, R. I.; Cherry Cotton Mills, Florence, Ala.; Stearns & Foster Co., Lockland, O. (repeat order); Wayne Knitting Mills, Fort Wayne, Ind.; Kavanaugh Knitting Co., Waterford, N. Y.; East Utica Warehouse Co., Utica, N. Y.; Friedberger-Aaron Mfg. Co., Philadelphia, Pa.; Mohawk Valley Cap Factory, Utica, N. Y.; Williamsburg Warehouse Co., Williamsburg, Va.; Jno. P. King Mfg. Co., Augusta, Ga.; Max Lowenthal & Bro., Rochester, N. Y.; H. E. Bradford & Co., Bennington, Vt.; Clayville Knitting Co., Utica, N. Y.; Blue Ridge Knitting Co., Hagerstown, Md.

Non-Shrinkable Wool.

When the "Nevershrink" process of making woolen goods non-shrinkable from washing was invented and brought out by C. Scott Althouse of Reading, Pa., it was thought that about the only practical use to which it would be put would be in the woolen underwear industry. Subsequent developments have, however, demonstrated that its success in the knitting industry is equally apparent for the treatment of any woolens that are to be subjected to washing and consequent shrinking.

The feature of this process is that while making the wool non-shrinkable, it accomplishes the result without changing any of the other properties of the fibre, and the process is simple and practical for mill use, and not merely a laboratory experiment.

In some foreign countries and in Canada numerous lines of goods are sold under a guarantee of being non-shrinkable, and retailers naturally prefer to purchase and handle lines that can be so guaranteed. This guarantee is coming into more extensive use in this country, and the "Nevershrink" process has contributed largely to this result.

Information regarding the process may be obtained from Chas. H. Heyer, 1501 Real Estate Trust Building, Philadelphia, Pa., who is the sales manager.

Wages and Working Time in France and Belgium.

The latest report of the French Federation of Textile Employers' Associations contain a comparison of the wages and hours of labor of cotton operatives in France and Belgium. From this it appears that in Belgium the average earnings are 41 cents per day of 11 1/4 hours, while in France the average earnings are 62 cents per day of 10 hours. Thus the French operative is shown to earn as much in 6 3/4 hours as the Belgian operative earns in 11 1/4 hours. The contrast between the neighboring countries is remarkable, but even the French earnings seem low judged by Lancashire standards, especially when we are told that they relate to spinners and weavers. Possibly they relate, however, to female operatives only, and to all women and girls employed in any capacity in spinning and weaving establishments. —Cotton Factory Times.

St. Louis Branch.

The Goulds Manufacturing Co., Seneca Falls, N. Y., have recently opened a branch office in the Chemical Building, St. Louis, Mo. It will be under the management of H. C. Dudley and will enable prospective customers to secure promptly full information pertaining to the Gould's complete line of efficient triplex, rotary, centrifugal and electric pumps, deep well working heads, etc. Mr. Dudley is well known in the southwest and will be pleased at all times to receive specifications and figures on any pumping propositions.

Repeat Orders for Bell System.

The Bell humidifying apparatus, which was installed over a year ago in several textile mills, has given such satisfaction to the manufacturers that repeat orders have been placed. Among the repeat orders recently received are one from the Talbot Mills at North Billerica, Mass., and one from the American Textile Co. of Cartersville, Ga. Several other manufacturers have expressed their satisfaction and expect to place further orders when needed.

The Bell Pure Air & Cooling Co., 97 Cedar St., New York, proprietors of this system, have issued some attractive literature on the subject which will be sent to interested parties.

Soluble Softening Oil.

The Arabol Mfg. Co., 100 William St., New York City, are turning out a soluble softening oil, which is especially valuable during the hot season. It is a stiffening oil that remains in sweet condition in both winter and summer, is to be preferred to tallow and other oils and greases, gives a smooth finish to the warps and enables the threads to separate well in the lease rods. It is easily handled, and cylinders and slashers remain clean. It is especially suited for closely woven goods such as velvets, corduroys, twills, umbrella cloths, cambric warps, etc.

The Standard Sewing Machine Company Buys the Arnold.

The Standard Sewing Machine Company of Cleveland, Ohio, announces that it has purchased and taken over the entire plant, assets and goodwill, of the Arnold Sewing Machine Company of Newark, N. J., and will continue at its factory in Cleveland to manufacture and sell Arnold overedge sewing machines.

Several hundred of these machines have been sold to knitting mills and clothing factories for overseaming, trimming, cord-edging, collar and cuff running, pants serging, sweater work, etc.

The Standard organization is such that they have good facilities for pushing the sale of the machine, while their factory is thoroughly equipped to turn out a high-grade mechanism. The machine is sold outright, without royalty.

The parts and supplies for the Arnold machine may be had at present at the Cleveland factory, and in the near future from different branch offices.

The National Cotton Mills at Lumberton, N. C., recently organized, have placed their entire order for machinery equipment with the Howard & Bullough American Machine Co., Ltd., Pawtucket, R. I., which will supply all the picking machinery, revolving flat cards, electric stop motion drawing, slubbing, intermediate, roving and spinning frames.

The Round Cotton Bale.

The recent report to the stockholders of the Planters' Compress Co., after announcing the unfavorable result of the last year's business, contains the following interesting explanation of why the round bale has not been adopted:

"The enterprise as a whole, however, has to stem the tide of competition with the tremendous power and influence of the old established square bale interests, and few persons realize the significance of this condition.

"It will of course be remembered that the handling and transportation advantages offered by the Lowry bale constituted one of the foundations of the enterprise. In ocean freights and ocean insurance the company has continued to obtain the former favorable differential of about one-third. In the matter of railroad freights, the railroads having refused to continue differentials (which in many cases they had voluntarily made), the company brought petitions before the interstate commerce commission to require the railroad companies to restore the same, and also to correct certain other palpable abuses.

"In one case it was shown (and not disputed) that we were charged the same rate for a freight service of 464 car miles as the square bale interests were charged for 1,540 car miles (both full car loading), and our petition set out that this was unjust and unreasonable. and that the railroads should be ordered to make some freight rate recognition of the difference in our favor.

"The commission (Commissioner Prouty dissenting in a vigorous opinion) decided in substance that as the Planters' Compress Company was not then handling more than a small fraction of the crop and might become monopolistic if given any differential, the petition should be and it was denied.

"The attitude of the railroads and the decision of the interstate commerce commission make it impossible to do anything with hay and similar products. For the present the company has ample funds for its requirements, and has no indebtedness."

A Second Revival in a Cotton Mill.

Huntsville, Ala., June 13.—The Huntsville Cotton Mill, D. B. Hazel, superintendent, is in trouble again as a result of another religious revival in Huntsville. A few weeks ago, when the Culpepper-Connelley revivals were in progress here, the entire mill was compelled to close down one day on account of a religious enthusiasm, and on yesterday another partial close down came from the same cause. In the spooling department, which is overseered by H. C. Scrimsher, several ladies began discussing the Starkey-Rice revival that is in progress at the Dallas Avenue Baptist Church. The discussion resulted in a general shouting among the female help and the boss was compelled to suspend work in that part of the mill. However, it is believed all operatives will resume work today.—Birmingham (Ala.) Ledger.

Electrical Installments.

The following list of six recent sales by the Crocker-Wheeler Company, of Ampere, N. J., shows that the company's customers are not confined to any one industrial line. In this short list of sales are represented a textile mill, a coal and coke company, Haverford College, a general manufacturer, a zinc company, and a powder company. The sales include electrical machinery of the following capacities:

Allentown Spinning Co., one 60 k. w., d. c. engine type generator, 125 volts, 675 r. p. m.

Northern Coal & Coke Company, one 80 k. w., d. c. generator, 250 volts.

N. J. Zinc Co., four motors ranging from 10 to 35 h. p.

Haverford College, one 125 k. v. a., engine type, a. c. generator, 2,300 volts, 60 cycle, 3 phase, 257 r. p. m.

Mohawk Valley Cap Co., one 300 k. w., d. c. generator, 480 volts, 150 r. p. m., one 18 k. w., d. c. generator, 125 volts, 175 r. p. m., and two motors ranging in h. p. from 10 to 75, all of 440 volts.

E. I. DuPont Co., one 130 k. w., d. c. generator, 550 volts.

To Prevent Decay of Wood.

Wood preservation is a subject that is now receiving considerable attention. The subject is not a new one; the preservation of railroad ties was first tested in the United States by the Chicago & Rock Island Railroad in 1856. Since that time nearly all the larger railroads have established treating plants of their own, buy treated lumber or apply some preservative with a brush for structural work.

In the textile trade premature decay of sills and joists, particularly in the dye house is a common occurrence. Again flooring laid where a proper circulation of air cannot be obtained rots out very quickly. Scale timbers, platforms and many other things might be preserved providing a cheap method could be employed that would not delay construction too much. Our attention has lately been called to a firm in New York City doing business as the Carbolineum Wood Preserving Co., at 349 West Broadway, representing the firm of R. Avenarius & Co., of Stuttgart, Germany. They have a preservative known by the general name of Carbolineum that has been on the market since 1875. It is stated that this material is largely used by the American Bell Telephone Co., which commenced its experiments some fifteen years ago. Several textile mills have had very satisfactory results in treating wood work with this preservative.

Avernarius Carbolineum is a heavy oil for superficial treatment. When applied with a brush like paint or by immersion of the timbers, it is claimed it imparts to the wood a pleasing and durable walnut stain and does not increase the inflammability. The manufacturers state that it is guaranteed to double the natural life of woodwork above or below ground or water.

Removal.

Richardson Brothers, paper and twine merchants, have, owing to the increase in their business, been obliged to move to larger quarters. They are now located at 51 and 53 Franklin St. (near Broadway), New York, where they will carry a still larger stock of high grade colored and white wrapping papers and specialties.

A Model Soap Plant.

The National Soap Co., that has been located on Montgomery Ave., below Ridge Ave., for many years, has removed to the new plant on 17th St., north of Lehigh Ave., Philadelphia. The new factory, which is 40 by 80 feet, two stories and basement, and of brick, while the engine and boiler room, which is in the rear, is of corrugated iron, is one of the most modern of the soap factories in the vicinity. It is located in a most convenient section of the city, being on two lines of railroad and also is almost in the heart of the textile centre. The officers of the company state that they have fitted up their new plant with all the latest appliances for the purpose of turning out the highest grades of soap for the textile trade, and that since their removal they have been doing more business than ever before. The officers of the company are H. J. Bickley, president; T. H. Moyer, treasurer, and Frank J. Morejon, superintendent, all of whom are practical and responsible men.

Woolen Mills in England and America.

The general superiority of English over American woolen mill practice admits of no reasonable doubt. Our people employ low materials to better purpose, and in their most soaring moods Americans have not ventured to claim more than equality in ability to turn out fine goods. We may believe, then, that America has little to teach in the matter of mere craftsmanship. Yet there is an important respect in which America is held to show England the way. Competent observers, with prolonged experience on both sides of the Atlantic, are persuaded that in system and organization American woolen mills are more perfect than ours. Much the same has been said before by way of general criticism in comparing the industrial life of the two countries, and it is repeated now with reference especially to the woolen industry.

The English inclination is to dispense with all possible clerical work. The American, on the other hand, is a firm believer in the uses of accountancy: consequently he is informed fully and continually as to actual costs, and week by week is able to estimate closely the amount of profit. His "progress-books" show exactly what advance has been made with the work, and how the mill stands as regards its capacity to make further deliveries. The quantity of material on hand is ascertainable at a glance; and, so far as system can ensure that desirable consummation, all waiting for small quantities of weft is precluded. Every mill manager (after his own fashion) pays heed to these details, and for the American it is claimed that he guards more closely and scientifically than the average Englishman.

The fruits of this carefulness are apparent on entering his mill. They are marked by an absence of warps waiting on the floor of the weaving-shed; by punctuality in twisting-in the warps that are wanted, and by leaving elsewhere those that are not required for months. Our English mills cannot all be condemned alike for defective organization, but it is safe to say that many of them would yield better returns were they disciplined according to the American standard. The perfecting of principles of management is perhaps the most pressing and most obvious duty of our woolen manufacturers. The time will certainly come when the present standard of efficiency will not meet the needs of the day; and the advent of machinery of improved productive capacity is always bringing that time nearer.

No doubt is expressed as to the particular way in which America is palpably superior, nor do observers hesitate to say wherein she is chiefly deficient. An unreasoning passion for mere speed lies at the root of America's failures and comparative failures. In many quarters it is believed to be rather more important to do a thing quickly than to do it well—and the error is a disastrous one to make. The carding-engines are speeded until the floor is littered with the short material, which cannot be worked into the yarn in less than an appointed time. By thrusting through an extra 40 pounds or so a day, a saving in pence is effected that is neutralized by a loss of material worth nearly as many shillings! The loss does not end there: for the material spins badly and provokes added expense in twisting and weaving. In combing a similar disregard for the value of material is shown, and an excessive quantity of long material passes into the noils. Parcels of American noils have lately come to Yorkshire to be recombed, and have yielded satisfactory returns to their buyer. In finishing cloth the same illiberality in point of time dooms American cheap goods for ever to look cheap and shabby, and gives to the finer woolens a needlessly sharp "handle."

There is no great fear that we on this side shall fall into the same error, although there are those who think that some of our managers are sacrificing true economy to a barren ideal of speed in carding. Happily, we have a corrective that our American friends appear to lack—for there are always some mills that are not to be seduced from the paths of demonstrable efficiency. In America a false convention of speed has been established; and, taken with the complaisance of the public in accepting inferior goods, it succeeds in perpetuating itself. Competition here has had the effect of causing better and better use to be made of low woolen materials. Competition in America serves rather to forbid manufacturers to utilize material of a low grade in the best possible manner. Hence it is that what the American grumbles over as an unconscionably "low blend" would be hailed as singularly tractable and desirable stock in some mills of our Yorkshire valleys. Our cousins have to learn patience from us, as we have to learn high systematization from them; and it will not be disputed that ours is the easier lesson.

—Textile Mercury.

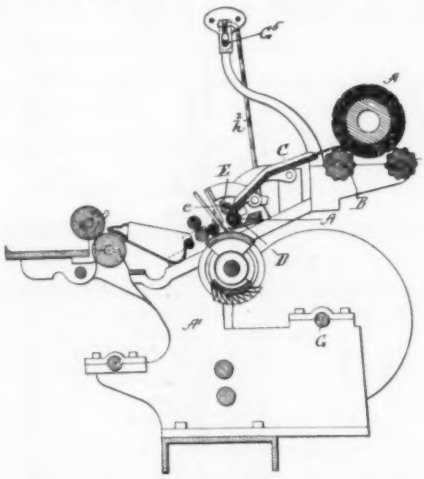
The London branch office of the Buffalo Forge Co., and the Buffalo Steam Pump Co., has been changed from 39 Victoria St., East, to Caxton House, Westminster. This change was made necessary by the rapid growth of the company's business in Great Britain and the new offices are larger and more conveniently located.

The Wilkes Barre Lace Mfg. Co., Wilkes Barre, Pa., which is making extensive additions to its present equipment, has placed orders for revolving flat cards, speeders and twisters with the Howard & Bullough American Machine Co., Pawtucket, R. I.

Recent Textile Patents.

COMBING MACHINES. Stop Motion for. 824,787. William Henry, New Bedford, Mass., assignor to Stoddard, Haserick & Richards, Boston, Mass.

Combing machines, as is well known, act upon the lap, which in the comber known as the "Heilman" is fed down the incline conductor and between the fluted and pressure rolls to the nippers.



During the ordinary operation of the machine the lap or sliver often breaks between the rolls and the nipper and winds on the fluted roll. Its increasing thickness crowds the cushion-plate against the needles of the half-lap or breaks the nipper-stand, so that the machine must be stopped and the lap cut off before the machine is in condition to start again. The sooner the machine is stopped after the winding begins the less time is wasted in cutting off the lap and readjusting the machine for continuing its work; but as the operator may have charge of several of these machines it often happens that there is considerable delay, due to the fact that he may be attending to one machine while an accident of this kind may happen on the next. The present invention is intended to remedy this difficulty by providing a stop-motion which is brought into action by the gradual thickening of the lap as it winds upon the fluted roll. As the layers increase the fluted roll tends to bind, so that it requires an increased power to rotate it, and in this device the increase of resistance of the roll is utilized to cause such an operation of the belt-shipper as will throw the belt from the fast to the loose pulley on the power-shaft.

COTTON BOLLING, Cleaning and Ginning Machine. 825,818. Jefferson M. Gardner, New London, Conn.

COTTON COMPRESSING APPARATUS. 825,653. Watson M. Holmes, Hoosic Falls, N. Y., assignor to the Planters' Compress Co., Boston, Mass.

COTTON GIN. 825,341. William F. Overmyer, Beechwood, Miss.

DECORTICATING MACHINE. 824,244. Walter J. Hollier, New Orleans, La.

EMBROIDERING MACHINE. 824,725. Victor Kobler, Rorschach, Switzerland.

EMBROIDERING MACHINES. Shuttle Driving Mechanism for. 825,485. Bruno Salzer and Gustav Walther, Chemnitz, Germany.

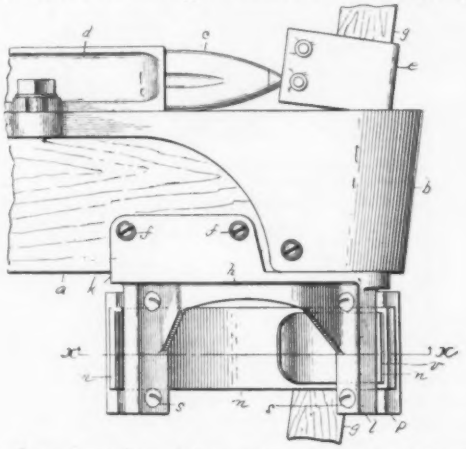
FABRIC-ROLL PROTECTOR. 825,239. Matthew C. Ohnemus, South Bend, Ind.

FIBROUS MATERIALS. Apparatus for Separating Oil or Grease from. 825,470. Nathan C. Lane, Philadelphia, Pa.

FIBROUS STALKS. Treating. 824,243. Walter J. Hollier, New Orleans, La.

LOOMS, Picker Check for. 825,309. Millard F. Field, Winthrop, Mass.

It is claimed for this check that it will produce the desired increasing resistance on the return or



backward motion of the picker-stick and a less resistance on the forward motion; that it will prevent rebound; that it is economical with regard to the wear on the stick and with respect to its own durability; that it is simple in construction and easily replaced; that it requires no oil, and is easily applied and adjusted.

LOOM BEATING-IN DEVICE. 824,685. James K. Dalkranian, New York, N. Y., assignor to Nazar Costikyan, New York, N. Y.

LOOM PATTERN Resetting Mechanism. 824,200. Herbert W. Owen, Dover, N. H., assignor of one half to Chas. H. Fish, Dover, N. H.

LOOM SHUTTLE MOTION. 825,049. Harry L. Goodwin, Boston, Mass., assignor to Goodwin Picker Co., Boston, Mass.

LOOM SHUTTLES, Filling Tension, Means for. 825,886. Arthur E. Benson, Agricultural College, Miss., assignor to Draper Co., Hopedale, Mass.

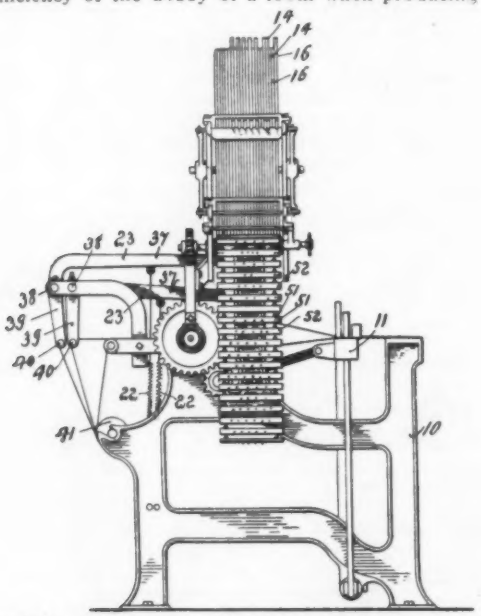
LOOM STOP MECHANISM. 824,335. John W. Bridge, Methuen, Mass., assignor to Arlington Mills, Lawrence, Mass.

LOOM STOP MOTION. 824,737. Felix O'Donnell, Pawtucket, R. I., assignor of one-half to Susan A. Brown, Pawtucket, R. I.

LOOM WEFT FORK. 825,004. Edward Parkinson, Providence, R. I.

LOOM FOR WEAVING Sheer or Swiss Fabrics. 825,504. Eugene H. Ballou, Pawtucket, R. I.

The object of this invention is to increase the efficiency of the dobby of a loom when producing



certain patterns in a sheer or Swiss weave, whereby the number of harnesses required for the operation of the loom will be greatly lessened and the length and width of the pattern-chain greatly diminished. It consists in the employment of depressing-heddles for carrying the warp-threads of the pattern-weave to the lower side of the shed to prevent the undesirable repetition of the pattern as called for by the pins of the pattern-chain, and also in the improved combination of the depressing-heddles with the slackening-levers.

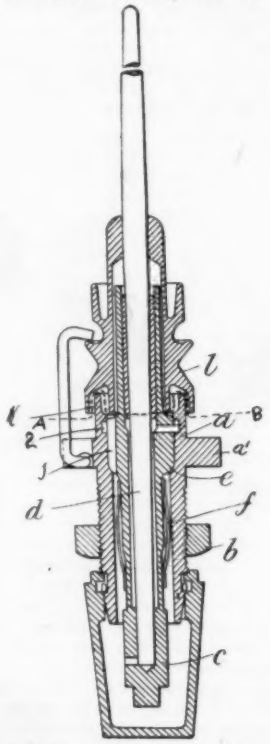
LOOM FOR WEAVING Tubular Fabrics. 824,226. Clinton Alvord, Worcester, Mass., assignor to Multiple Woven Hose & Rubber Co., New York, N. Y.

MEASURING AND MARKING Fabrics. Mechanism for. 825,128. Arthur J. Ickringill, Keighley, Eng.

SPINDLE STRAIGHTENING Machine. Cotton Mill. 825,192. Thomas M. Costello and William H. Monty, Charlotte, N. C.

SPINDLES FOR SPINNING and Doubling Textile Fibres. Bearing for. 824,708. Ernest T. Dalgleish, Strines, and Frederic Hardman, Bolton, England.

In this improved bearing for a spindle the well-known vertically-split balloon-spring is employed and the chief feature of novelty consists in placing



this spring, which surrounds the inner bush and footstep bearing, in the bolster below the upper bearing portion of the tube in the bolster, thereby obtaining a more perfect bearing for the spindle, that is to say, one that adjusts itself better to any movement of the spindle. To prevent the inner tube revolving with the spindle, a short pin is secured in the inner tube and another pin secured on the bolster.

UNDERGARMENT. 824,140. Charles A. Powell, Whitesboro, N. Y.

WOVEN FABRIC. 825,163. William T. Smith, Philadelphia, Pa.

WOVEN FABRIC. 824,448. William T. Smith, Philadelphia, Pa.

WOVEN FABRIC. Multicolored. 824,158. Jan Szczepanik, Vienna, Austria.

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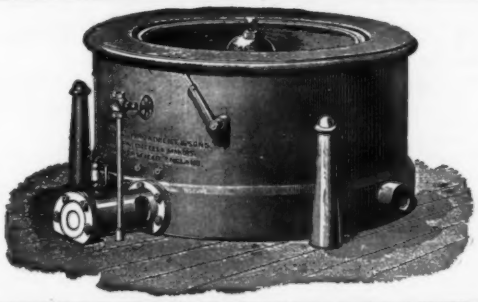

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The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

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Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Harwood, Geo. S., & Son.
Hogg, Jas., Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

Balling Machine.
Diamond Textile Machine Works.
Torrance Mfg. Co.

Bandings.
——See under Yarns.

Baskets.
Lane, W. T., & Bro.
Morris & Co.

Belting.
Gandy Belting Co.
Main Belting Co.
Norwich Belt Mfg. Co.
Shultz Belting Co.
Turner, J. S., Mfg. Co.
——See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jas., Crucible Co.
Shultz Belting Co.
Stephenson Mfg. Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Allen, Wm., Sons Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Roessler & Hasslacher Chemical Co.

Blowers.
Murphy, Harry F., & Co.

Blowers and Blower Systems.
American Blower Co.
Barney Ventilating Fan Works.
Boston Blower Co.
Buffalo Forge Co.
Green Fuel Economizer Co.
Mass. Fan Co.
New York Blower Co.
Philadelphia Drying Machinery Co.
Sterling Pipe & Blower Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

Bobbin Covers.
Kolb, Frank E.

Bobbin Machinery.
Defiance Machine Works.

Bobbins, Spools, Shuttles, Etc.
American Textile Specialty Mchy. Co.
Leigh, Evan A.
Tebbets, E. L., & Co.
Wilson & Co.

Boiler Inspection and Insurance.
——See Steam Boiler Insurance.

Boilers.
——See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Boxes (Paper).
——See Paper Boxes.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.
Parks & Woolson Machine Co.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Rice, Barton & Fales Co.
Taunton, New Bedford, Copper Co.
Textile Finishing Mchry. Co.
——See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.
Morris & Co.

Carbonizing.
Riverdale Woolen Co.

Carbonizing Machinery.
American Drying Machinery Co.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.

Card Clothing.
Ashworth Bros.
Bowes, L. M., Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Carded Cotton.
Blaisdell, S., Jr., Company.
Indian Orchard Company.
Wonalancet Company.

Card Feeds.
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Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Stoddard, Haserick, Richards & Co.

Carders' Tools.
Brown, W. H.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Parks & Woolson Machine Co.
Philadelphia Textile Machinery Co
Smith & Furbush Machine Co.

Case and Barrel Trucks.
Clark, The Geo. P., Co.

Castings.
Farrell Foundry and Machine Co.
Schofield, Wm., Co.

Cement Pans.
Scaife, W. B., & Sons.

Chain Blocks and Hoist.
Yale & Towne Mfg. Co.

Chemicals.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.

Chemists.
Little, Arthur D.

Cling Surface.
Cling Surface Mfg. Co.

Clocks.
Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Smyth, J. L. N., Paper Co.

Cloth Cutting Machinery.
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Cloth Stretchers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Leyland, Thomas, & Co.
Textile Finishing Machinery Co.

Clutches.
American Tool & Machine Co.
Humphrey Machine Co.
Hunter, James, Machine Co.

Color Kettles.
Rice, Barton & Fales Machine & Iron Company.

Comb Aprons.
Turner, J. S., Mfg. Co.

Combs (Wool and Cotton).
Hood, R. H.
Leigh, Evan A.
Lowe, Stephen C.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Concrete Work and Construction.
Simpson Bros. Corporation.

Conveyors, Pneumatic.
——See Blowers & Blower Systems.

Cop Spindles.
American Textile Specialty Mchy. Co.

Cop Tubes.
American Textile Specialty Mchy. Co.
——See Paper Tubes.

Copper Print Rollers.
Rice, Barton & Fales Machine & Iron Company.
Taunton, New Bedford, Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.

Copper Work for Dyers.
Butterworth, H. W., & Sons Co.
Textile Finishing Machinery Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Stoddard, Haserick, Richards Co.
Wonalancet Company.

Cotton Elevators.
Buffalo Forge Co.

Cotton Machinery.
Altemus, Jacob K.
American Textile Appliances Co.
American Textile Specialty Mchy. Co.
American Drying Machinery Co.

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Ashworth Bros.
Barker, James.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Curtis & Marble Machine Co.
Diamond Textile Machine Works.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Hetherington, John, & Sons, Ltd.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
Leigh, Evan A.
Lowe, Stephen C.
Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Rice, Barton & Fales Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Smith & Furbush Machine Co.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Cotton Softeners.
Bosson & Lane.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.

Cranes.
Yale & Towne Mfg. Co.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Cutter for Knit Goods.
Eastman Machine Co.
Langston, Samuel M.

Cutting Machinery.
Eastman Machine Co.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Stafford, G. W., Mfg. Co.

Drawing Rolls.
Hood, R. H.
Metallic Drawing Roll Co., The.

Dryers.
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Boston Blower Co.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Vacuum Process Co.

Dry Goods Trucks.
Clark, The Geo. P., Co.

Drying Boards.
Bull, William C.
Pearson, J. T.

Dusters.
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Dust Collectors.
Allington & Curtis Mfg. Co.
Philadelphia Drying Machinery Co.
Sterling Blower & Pipe Mfg. Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Fairhill Bleachery.
Fawell, Arthur.
Firth & Foster Co.
Greenwood, R., & Bault.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Lorimer's, The Wm. H. & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Providence Mills Mfg. Co.
Rowland, Samuel.

Dyeing, Drying, Bleaching and Finishing Machinery.
Aiton Machine Co.
Allen, William, Sons Co.
American Blower Co.
American Drying Machinery Co.
American Dyeing Machine Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Beaumont's Limited.
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunt, Rodney, Machine Company.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Rice, Barton & Fales Co.
Smith, Drum & Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Vacuum Process Co.
Whiteley, William, & Sons, Ltd.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Trucks.
Clark, The Geo. P., Co.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Continental Color & Chemical Co.
Kalle & Co.
Ford, J. B., Co.
Fortner, L. B.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.
Sykes, Walter F., & Co.
Thayer, Ed. M.
West Indies Chemical Works, Ltd.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Murphy, Harry F., & Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Cloth Cutter.
Eastman Machine Co.

Electric Fans.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Mass. Fan Co.
Murphy, Harry F., & Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.
Wing, L. J., Mfg. Co.

Electric Lamps.
Sturtevant, B. F., Company.

Electric Lighting.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Yale & Towne Mfg. Co.

Electric Motors.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.
Wing, L. J., Mfg. Co.

Elevators.
Morse, Williams & Co.
Salem Elevator Works.

Embroidery Machines for Hosiery and Knit Goods.
Walther, Otto.

Employees' Time Recorders.
Pettes & Randall Co.

Engine Stops.
Consolidated Engine Stop Co.

Engineers' Supplies.
Moulton, P. A.

Engravers.
Smith Bros.

Exhaust Heads.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co.
Scaife, W. B., & Sons.

Feed Water Pumps.
Goulds Mfg. Co.
Scaife, W. B., & Sons.

Feed Water Purifiers.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
The Hungerford Filter Corp.

Feeds.
——See Automatic Feeds.

Felt Hardeners.
Farrell Foundry and Machine Co.

Felting Machinery.
Farrell Foundry and Machine Co.

Filters.
American Water Softener Co.
Norwood Engineering Co.
Phila. Water Purification Co., The.
Scaife, W. B., & Sons.
The Hungerford Filter Corp.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

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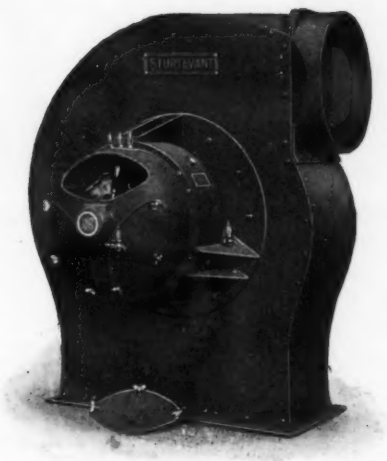
All types of

Sturtevant Fans

are equipped with electric motors of Sturtevant make



In the smaller sizes the specially designed motor, either open or enclosed, is attached directly to the side plate of the fan.

B. F. Sturtevant Co., Boston, Mass.

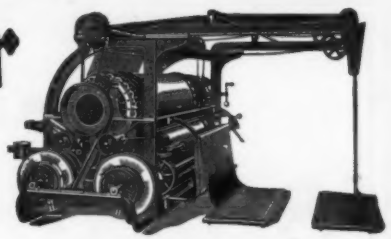
General Office and Works, Hyde Park, Mass.

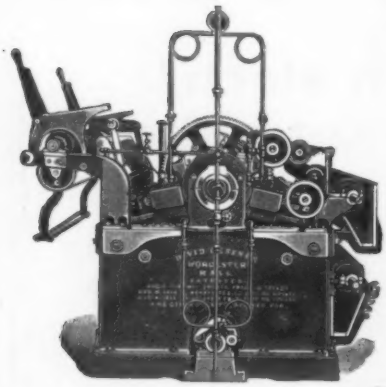
New York Philadelphia Chicago London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, Etc. 561

avid Gessner

Worcester, Mass.

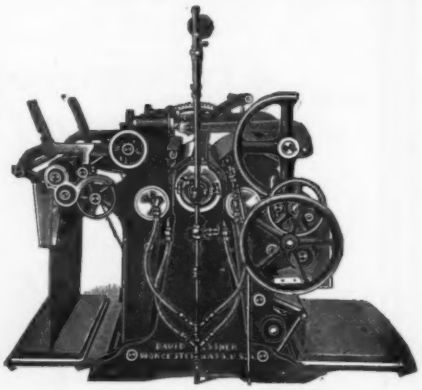




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Fire Pumps.
—See Pumps.

Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.

Fluted Rolls.
Diamond Textile Machine Works.
Hood, R. H.
Leigh, Evan A.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Hopkins Machine Works.
Leigh, Evan A.

Forges.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Forwarders.
Salvator Transfer, Inc.

Friction Clutches.
—See Clutches.

Friction Cones.
Evans, G. Frank.

Fuel Economizers.
Green Fuel Economizer Co.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.

Garnetts.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
Jones, Lewis.

Gassing Machines.
Stubbs, Joseph.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Farrell Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrell Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
Buffalo Forge Co.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.

Grate Bars.
Tupper, W. W., & Co.

Grease.
Cook's, Adam, Son.

Gut Cords and Strings.
Wentworth, M. W.

Heating.
—See Ventilating.

Heddles.
Steel Heddle Mfg. Co.
Stoddard, Haserick, Richards & Co.

Hoisting Apparatus.
Economy Engineering Co.
Larrabee, Jno. E.
Yale & Towne Mfg. Co.

Hosiery Boards.
Pearson, J. T.

Hosiery Labels.
Beck, Charles, Paper Co.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.

Hydraulic Rams.
Power Specialty Co.

Hydro Extractors.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Hunt, Rodney, Machine Company.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance, Fire and for Loss of Profits.
Home Insurance Co.

Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.

Jacquards.
Halton's Thomas, Sons.

Knit Goods, Edgings, Trimmings, Etc.
Cathcart, John, & Co.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines, Crochet, Etc.
Craw, J. W., Laundry Machinery Co.
Eastman Machine Co.
Hunt, Rodney, Machine Company.
Langston, Samuel M.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
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Jenckes, E., Mfg. Co.
Jones, Lewis.

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CROMPTON-THAYER LOOM COMPANY

—— MANUFACTURERS OF ——

Fancy Looms

For Weaving Worsted and Woolen, Fancy Cottons and Silk Fabrics.

DOBBIES, BOX MOTIONS and SUPPLIES.

WORKS AND OFFICES:

677 Cambridge Street, - Worcester, Mass.

ALEXANDER & GARSED, Southern Agents.

Knitting Machy—cont.
Kinsey, Walter.
Koch, Edward W.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, Loyal T.
Jarrard Needle Company.
Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Treat, Orion.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Sawyer-Mann Electric Co.
Westinghouse Electric & Mfg. Co.

Leather.
Bowes, L. M., Co.

Loom Pickers.
Garland Mfg. Co.

Loom Repairs and Parts.
Glaser Mfg. Co.

Looms.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricators.
Cook's, Adam, Son.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.

Lumpers.
Diamond Textile Machine Works.
Gerry, George, & Son.
Schofield, Wm., Co.

Machinery Dealers.
Jefferson, Ed., & Bro.
Kinsey, Walter.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Stead, Arthur.
Taylor, James.

Machinists' Tools.
Whitin, The D. E., Co.

Mails.
Walder, J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.
Parks & Woolson Machine Co.

Mechanical Draft.
American Blower Co.
Boston Blower Co.
Buffalo Forge Co.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Murphy, Harry F., & Co.
Sturtevant, B. F., Co.

Mechanical Engineers.
American Blower Co.
Buffalo Forge Co.
Dean & Main.
Glaser Mfg. Co.
Murphy, Harry F., & Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mercerizers.
Greenwood & Bault, R.
Home Bleach & Dye Works.
Lorrimer, Wm. H., Sons Co.
Luzern Cotton Yarn Co.

Mercerizing Machinery.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
—See Architects and Mill Engineers.

Mill Brushes.
—See Brushes.

Mill Builders and Engineers.
Ferguson, John W.

Mill Sewing Machines.
—See Sewing Machines and Supplies.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Barker, James.
Buckley's, Benj., Son, Gun Mill.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Glaser Mfg. Co.

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Lane, W. T., & Bro.
Leigh, Evan A.
Main Belting Co.
Morris & Co.
Murphy, E. W., & Co.
Norwich Belt Mfg. Co.
Philadelphia Drying Machinery Co.
Riley, C. E., Company.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Tucker, W. W. & C. F.
Turner, J. S., Mfg. Co.
Ward & Vandegrift.
Walworth Manufacturing Co.

Motors.
——See Electric Motors.

Napping Machinery.
American Napping Machine Co.
Birch Bros., Somerville Machine Wks.
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Whiteley, William, & Sons, Ltd.

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Ryle, Wm., & Co.

Oil Cups.
Tucker, W. & C. F.
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Oils.
Borne, Scrymser Co.
Cook's, Adam, Son.
Excelsior Wool Oil Compound Co.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.

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Paper Boards.
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Langston, Samuel M.

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Crosby & Gregory.
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Roessler & Hasslacher Chemical Co.

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Plymouth Cordage Co.

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Riley, C. E., Company.
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Nicetown Mfg. Co.
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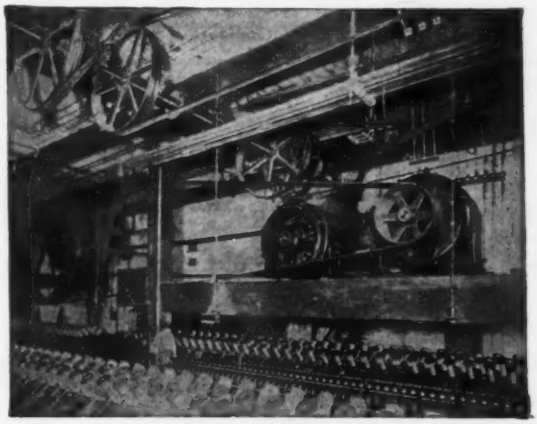

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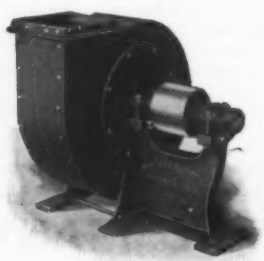

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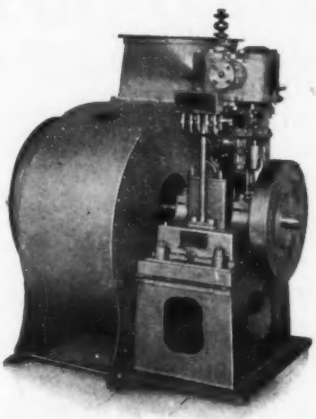

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Overseer of Dyeing. Position wanted by a man 26 years of age; married; American. Has worked on dress goods, cassimeres, piece dyes, worsteds, cotton worsteds, raw stock and skein dyeing. Is familiar with all kinds of dyeing machinery. Good references. 3612, Textile World Record, Boston, Mass.

Cotton Goods for Blouses, Dresses, Shirts, etc. Gentleman of education and highest respectability, former commercial manager of important textile company; artistic, technical, commercial knowledge; one of the best experts in Austria in colored weaving (also expert in spinning, dyeing, finishing), wants situation. Long years' experience in sampling and manufacturing fancy goods from cheapest to most expensive kinds. Speaks many languages. Highest references. Address A. O. Frank, Hauptpost lagernd, Vienna, Austria.

Overseer of Dyeing. Position wanted by a man 30 years of age; married; American. Has worked on hosiery, cotton, wool, silk and mixtures. Is experienced on printing and bleaching raw stock and yarns. Fast black on hosiery a specialty. Good references. 2052, Textile World Record, Boston, Mass.

Boss Dyer long and short chain skein yarns, indigo blues, raw stock and bleaching. 48 years of age; married; Scotch; good reference. 3442, Textile World Record, Boston.

Overseer of Woolen Dyeing. American; 31 years of age. Worked on raw stock, piece dyes, indigo vats, etc. 10 years' experience as overseer. Wants position in New England or New York State. 3435, Textile World Record, Boston.

Boss Dyer. Worked on woolens and worsteds, serges, meltons, all kinds of woolen cloth and worsted yarn. First-class recommendations; 35 years of age; Scotch. 3064, Textile World Record, Boston, Mass.

SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, is now a member of the Textile World Record staff, and gives special attention to this department. He would be pleased to hear from any of his friends who may be interested.

WOOLEN SUPERINTENDENTS.

Supt. and Designer, or Asst. Supt. and Designer. Position wanted by a man of Scotch nationality, married. Is experienced on fancy worsteds, fine and medium, woolen and dress goods. Is familiar with all kinds of woolen machinery. Good references. 3587, Textile World Record.

Supt., Asst. Supt., or Overseer of Carding. Position wanted by a man 39 years of age, married, American. Is experienced on all kinds of cotton colored goods, long or short stock, also on bleached stock. Is familiar with Colvin, Whitin and Crompton looms, and all makes of carding and spinning machinery. Good references. 3585, Textile World Record.

Superintendent or Designer. Position wanted by a man 50 years of age, married, American. Has manufactured all kinds of woolen and worsted goods, cotton worsteds, wool, cotton and shoddy mixes. Is familiar with all kinds of machinery. Good references. 3670, Textile World Record, Boston, Mass.

Superintendent of Yarn Mill, or Overseer of Carding. Position wanted by a man 46 years of age, married, English. Is experienced on beavers, serge cassimeres, meltons, kerseys, and yarns of all kinds. Is familiar with all makes of American and English carding machinery. Good references. 1701, Textile World Record, Boston, Mass.

Assistant Superintendent and Assistant Designer. Position wanted by a man 27 years of age, German. Has worked on fancy cassimeres, overcoatings and dress goods. Is familiar with Crompton & Knowles looms. Good references. 3681, Textile World Record, Boston, Mass.

Agent, Superintendent and Designer. Position wanted by a man 28 years of age, Scotch. Has manufactured fancy woolens and worsteds. Is familiar with all kinds of woolens and worsted machinery. Good references. 3679, Textile World Record, Boston, Mass.

Superintendent of a Woolen Mill. Position wanted by an American. Has had experience on satinets, unions, cassimeres, worsted goods, etc. Is familiar with all kinds of woolen machinery. First-class references. 1537, Textile World Record, Boston, Mass.

Superintendent and Designer. Understands all kinds of woolen and worsted goods for men's and women's wear. Could take a position at once; 28 years of age; first-class recommendations. 3264, Textile World Record, Boston, Mass.

Assistant Superintendent and Designer. Position wanted by a man 32 years of age, married. Is experienced on men's wear, dress goods, cotton worsteds, woolens, linen towels, madras, flannels, etc. Is familiar with Knowles, Crompton, Clipper, Bridesburg dobby cam looms, dressing, spooling, twisting and warping frames. Good references. *3665, Textile World Record, Boston, Mass.

Asst. Supt. or Overseer of Spinning. Position wanted by a man 35 years of age, married, American. Has worked on wool, cotton and wool and shoddy mixes. Is familiar with all kinds of spinning machinery. Good references. 3104, Textile World Record, Boston, Mass.

Superintendent of a Cotton or Woolen Yarn Mill. Position wanted by a man 48 years of age, married, English. Is experienced on hosiery yarns, both cotton and woolen system, yarns for dress goods and unions. Is familiar with all kinds of American and English cotton and woolen machinery. Good references. 3656, Textile World Record, Boston, Mass.

Superintendent of a Small Worsted Plant, or Overseer of Drawing, Spinning and Twisting. Position wanted by a man 38 years of age, married, English. Has worked on botany or any kind of weaving yarns, also fancy novelties. Is familiar with all kinds of English and American worsted machinery. Good references. 3689, Textile World Record, Boston, Mass.

COTTON SUPERINTENDENTS.

Superintendent and Designer, or Designer. Young man, American, with 4 years' experience as designer. Worked on shirtings and all kinds of elastic and non-elastic webs, on Crompton and Knowles, broad and narrow looms. Will accept a good position anywhere in United States. 3359, Textile World Record, Boston.

Superintendent of Bleachery. Worked on all kinds of lawns, lenos and colored lawns, towels, colored and white ducks, drills, tickings, shirtings and hosiery. Familiar with all kinds of bleaching machinery; first-class references; 55 years of age. 3245, Textile World Record.

Superintendent and Designer. Position wanted by a man 30 years of age, English. Has worked on all kinds of fancy cotton goods, and is familiar with all kinds of cotton looms. Good references. 3682, Textile World Record, Boston, Mass.

Superintendent or assistant superintendent of a cotton mill. Position wanted by a man 29 years of age; married. Is experienced on sheetings, shirtings, ginghams, flannelettes, domets and fancy hosiery yarns. Is expert on colored work. Is familiar with all kinds of American and English carding and spinning machinery. First-class references. 1718, Textile World Record, Boston, Mass.

Cotton Superintendent. Worked on dress goods, shirtings, skirtings, ginghams, cotton flannels and blankets. Familiar with all kinds of cotton machinery. Age 37, married; first-class references. 1432, Textile World Record.

Superintendent of cotton mill, spinning or weaving, assistant superintendent or designer or overseer of weaving, plain or fancy goods. Age 28; English; married; first-class references. 3243, Textile World Record.

Superintendent Small Yarn Mill. American, 25 years of age; worked on carded yarns, 8s to 60s, American cotton, white goods only. Also on all makes American machinery. Would accept position as carder, weaver or designer, where there was a chance for advancement. 3392, Textile World Record, Boston.

Cotton Superintendent or Overseer of Carding in a large mill. Position wanted by a man 44 years of age, married, American. Worked on all kind of goods made in a fine goods mill. First class references. 3489, Textile World Record, Boston.

Cotton Superintendent or Overseer Carding and Spinning in large mill. Position wanted by a man who has had a wide experience on cotton goods, denims, dress goods, lawns, muslins, sheetings, plain and fancy shirtings and flannelettes and napped goods. Made yarns from 6s to 100s. References from leading mills. 42 years, married, American. 3487, Textile World Record, Boston.

Superintendency of cotton mill wanted by a thoroughly practical cotton manufacturer of over 30 years' experience. Age 38; married. Temperate. Good manager. Fully competent to obtain full production at minimum cost and maintain best selling qualities. Highest references given. 1236, Textile World Record.

Superintendent of bleaching. Worked on all kinds of lawns, lenos and colored lenos, towels, colored and white, ducks, drills, sateens, tickings. Age 55; English; married. First-class references. 3245, Textile World Record.

Superintendent of bleaching and finishing cotton goods. Worked on all kinds of cheese cloth, buttercloth, sheetings, quilts, cambrics, long cloth, ducks and drills. Age 31; English; married. 3218, Textile World Record, Boston, Mass.

Superintendent or Agent of Cotton Mill. Position wanted by a man 43 years of age, married, American. Has worked on all kinds of cotton and worsted goods, and is familiar with Draper, Crompton & Knowles, Lowell, Whitin, Mason, Kilbourn and Lincoln looms. Good references. 3669, Textile World Record, Boston, Mass.

WOOLEN WEAVERS.

Overseer of Weaving. Position wanted by a man 37 years of age, married, American. Has worked on all kinds of woolen and worsted goods, and is familiar with all kinds of woolen and worsted looms. Good references. 3673, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 34 years of age, married, American. Has worked on cotton goods, cassimeres, fancy worsteds, and all kinds of woolen goods. Is familiar with Crompton & Knowles looms. Good references. 3687, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 41 years of age, married, German. Has worked on wool and worsted goods of all descriptions, and is familiar with Crompton & Knowles and Crompton Thayer looms. First-class references. 3634, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a steady, strictly temperate and reliable married man. Has a good record for being a manager of help and a hustler for production. Worked in last place 12 years on all kinds of woolen goods; is now employed. Used to Crompton & Knowles and Crompton & Thayer looms. 3623, Textile World Record, Boston, Mass.

Boss Weaver in a woolen mill. Worked for the past twenty years in one of the best woolen mills in Massachusetts and eight years in the same mill for a former company. 57 years of age; married; English; first-class references. 3270, Textile World Record.

Woolen Boss Weaver. Worked on worsteds, woolens of all kinds, also dress goods. American; 38 years of age; married. 3231, Textile World Record.

Overseer of Woolen Weaving. American, 37 years of age, with experience on fancy cassimeres, cheviots, worsteds, piece dyes and dress goods. Has excellent recommendations. Wishes position in New England. 3401, Textile World Record, Boston.

Overseer of Woolen Weaving. Position wanted by a man 36 years of age; married. Has worked on satinets, unions, cassimeres, men's wear, dress goods, overcoatings and blankets. Is familiar with Knowles, Gilbert, Stafford and Crompton looms. First-class references. 1790, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 39 years of age, American. Has worked on unions, cassimeres, shirtings and overcoatings. Is familiar with Crompton & Knowles looms. Good references. 3601, Textile World Record, Boston, Mass.

Overseer of Weaving, or would consider a good loom fixing job in a woolen mill. Age 47; Protestant; good references. 3247, Textile World Record.

Overseer of Weaving. 40 years of age, with 20 years' experience fixing and weaving in New England. Understands plain and fancy woolens and worsteds. Crompton and Knowles looms. Good references. 3369, Textile World Record.

Overseer of Weaving. 36 years of age, with 18 years' experience in a large mill in Massachusetts. Accustomed to woolens and worsteds, high and low grade, and to all machinery used in weave room. Prefers position in or about New England. 3373, Textile World Record.

Overseer of Weaving, or weaver and designer. American, 40 years of age, with experience on all grades men's wear and all makes of woolen looms, pickers, spoolers, twisters, etc., wants a position in the East. 3379, Textile World Record.

Boss Weaver in Woolen Mill, or would accept a good loom fixing position. Worked on satinets, cotton and woolen warp goods, sheetings, shirtings and ducks. Also worked on cotton and woolen jute bagging. 45 years of age. 1806, Textile World Record.

Overseer of Woolen Weaving or boss dressing. Worked on all kinds of woolen and worsted dress goods. A good manager of help. Could handle both dressing and weaving in medium sized mill. First-class references; 42 years of age. 3293, Textile World Record.

Overseer of Woolen Weaving. American, 40 years of age, married, with experience on worsteds, cassimeres, kerseys, dress goods, satinets, etc., wants a position in the East. Has worked on all machinery used in this work. 3412, Textile World Record.

Young Man, American, wants position as boss weaver or assistant superintendent. Has worked on fancy worsteds, cassimeres and cheviots. Can also design. 1712, Textile World Record.

COTTON WEAVERS.

Overseer of Weaving. Worked on ginghams, sheetings, shirtings and dress goods. Familiar with Crompton & Knowles and Mason looms. First-class recommendations, 23 years of age. 3299, Textile World Record, Boston, Mass.

Overseer of Weaving or Cloth Room. Worked on heavy ducks, denims, suitings, checks, lenos, fancy lenos and lappets, from 2s to 200s yarn carded and combed. Familiar with Lowell, Whiting, Crompton & Knowles, Mason and Draper looms. First-class recommendations, 34 years of age, married, American. 3309, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 28 years of age and married. Worked on fancy shirtings, lenos, silk dress goods, lappets and plain goods. Familiar with Jacquard machines, Mason, Crompton & Knowles and Stafford dobbies, looms. 3474, Textile World Record, Boston.

Overseer Cotton Weaving. Position wanted by a man who has had experience on plain goods, twills, sateens on all counts from 18s up. 34 years of age; married. Could take a position at short notice. Worked on Mason, Colvin, Whitin, Lowell and Northrop looms. 3455, Textile World Record.

Overseer of Cotton Weaving. American, 27 years of age, with experience on prints, cambrics, sateens, drills, corded goods, etc. Worked on Draper, Whitin, Lowell, Mason and Cohen looms. Prefers the East. 3430, Textile World Record.

Overseer of Cotton Weaving. American, 45 years of age, with 26 years' experience on plain sheetings, sateens and twills as fixer, second hand and overseer. Able and temperate. Wants position in the East. 3439, Textile World Record.

Foreman of Weaving. Worked on ribbons of all descriptions, silk and cotton labels, tapes and lenos. Will not go to Canada or Maine. Age 34, American. First-class references. 3183, Textile World Record.

Overseer of Weaving, superintendent of weaving or designing. Worked on all kinds of cotton dress goods, also suitings. Familiar with all kinds of American and English looms and machinery. Age 41; English; widower. First-class references. 2058, Textile World Record.

Overseer of Weaving or Asst. Supt. Position wanted by a man 48 years of age, married. Has worked on all kinds of fancy woolen and worsted goods, wool and cotton and wool and shoddy mixes, and fancy cotton dress goods; can also design. Is familiar with Crompton & Knowles looms, Gilbert looms and dobby-heads, and Whitin plain and fancy looms. Has good references. 3501, Textile World Record.

Overseer of Weaving or designer. Familiar with all kinds of dress goods, lenos, lappets or any kind of fancy Jacquard weaving. Understands all kinds of English and American machinery. Age 46; English; first-class references. 3267, Textile World Record.

Overseer of Weaving. Familiar with shirtings, sheetings, lawns, cambric, ginghams, checks and stripes, union goods, awnings, ducks, drills, light and heavy weight, plain and fancy flannels. 39 years of age, American, first-class references. 3257, Textile World Record, Boston, Mass.

Overseer of Weaving and Designing. Worked on plain and fancy goods, also jacquard work. First-class recommendations, 33 years of age, English. 1397, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving. Worked on lenos, checks, plaids, fancy stripes, drop box and plain looms. First-class references. Will not go West or to Canada. Age 36, English. First-class references. 1855, Textile World Record.

Overseer Cotton Weaving. Plain and a variety of fancies, lenos, etc. Good experience. A young man; English; married. 3147, Textile World Record.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Weaving. Englishman; 33 years of age; married; worked on fine lawns, sheetings, sateens and fancies, coarse drills, twills, bicycle cloth, automobile cloth for tires. Familiar with Whitin, Crompton, Knowles, Mason, Kilburn & Lincoln and Lowell machines. 3073, Textile World Record.

Overseer of Silk Weaving. Worked on all kinds of plain silk goods. Familiar with Crompton & Knowles, Stafford & Thayer looms. Good references. 3303, Textile World Record.

COTTON CARDERS.

Secondhand in Card Room, or Charge of Combs. Position wanted by a man 30 years of age, married, English. Has worked on all grades of American and Egyptian cotton and is familiar with all kinds of speeders, Whitin, Dobson & Barlow cards, combs and drawing frames. Good references. 3671, Textile World Record, Boston, Mass.

Overseer of Combing. Position wanted by a man 22 years of age, American. Has worked on all classes of medium and fine yarns, and is familiar with Asa Lee's and Whitin combs. Good references. 3664, Textile World Record, Boston, Mass.

Overseer of Carding. Has held all positions in picker and card rooms. White and colored goods, 8s to 40s. 3070, Textile World Record.

Overseer, of Cotton Carding. American; 34 years of age; worked on all classes of cotton goods and all machinery used in this work. Would accept a good second hand position. Prefers position in the East. 3393, Textile World Record.

Superintendent or overseer of carding in a large mill. Worked on sheetings, ginghams. Will not go West. Familiar with all kinds of cotton machinery. 41 years of age; American; first-class references. 2021, Textile World Record.

Cotton Superintendent or overseer of carding. Worked on all white goods yarns from 12s to 150s. Familiar with the Lowell, Saco & Pettee revolving flat cards. Age 37; married; first-class references. 1898, Textile World Record.

Overseer Cotton Carding or Spinning desires position. Age 47; American; married. Is familiar with all the modern makes of English and American machinery, revolving top flat cards, single and double carding. 2073. Textile World Record.

COTTON SPINNERS.

Overseer of ring spinning, spooling and warping. Position wanted by a man 32 years of age, American. Has worked on denims, plaids, awnings, checks, lawns, sheetings, lenos, shirtings, etc. Is familiar with Mason, Whitin, Lowell, Davis & Furber and Fales & Jenks, spinning machinery. Good references. 3604, Textile World Record. Boston, Mass.

Overseer of Spinning, Spooling, Warping. Position wanted by a man 35 years of age, married, American. Has worked on all kinds of cotton yarns, from 20s to 120s. Is familiar with Fales & Jenks, Mason, Whitin, Saco & Pettee, and Lowell spinning machinery. Good references. 1788, Textile World Record, Boston, Mass.

Overseer of Spinning, Spooling, Warping. Position is wanted by a man 35 years of age, married, American. Has made yarns from 8s to 80s on all makes of spinning machinery. Worked on all makes of spooling, warping, twisting machines. 3468, Textile World Record, Boston.

Overseer of Ring Spinning. Position wanted by a man 26 years of age. Has worked on all kinds and numbers of cotton yarn. Is familiar with Whitin spinning machinery. Good references. 3684, Textile World Record, Boston, Mass.

Overseer of Mule and ring spinning. Position wanted by a man 35 years of age, married and American. Has worked on cotton yarns from 20s to 120s and is familiar with Parr, Asa Leis, Hetherington, Dobson & Barlow, and Mason new rope mules, and ring frames. Good references. 3516, Textile World Record, Boston, Mass.

Overseer of mule and ring spinning. Position wanted by a man 40 years of age; married; English. Has worked on all kinds and numbers of cotton yarn. Is familiar with all makes of mules. Good references. 3607, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, spooling, long chain beaming, slashing and drawing-in. All kinds of fancies, sheetings, etc. $3.00 per day up. 3202, Textile World Record.

Overseer of Ring Spinning, spooling and warping. Worked on all classes of goods, hosiery yarns, long and short staples from 8s up. Familiar with Sayles & Jenks, Mason, Lowell, Whiting and Saco & Pettee machinery. First-class references. 28 years of age; married. 3308, Textile World Record.

Overseer Ring Spinning, spooling and warping wishes a position. A married man, with good experience. Worked on sheetings, shirtings, jeans grain bags. 3152, Textile World Record.

WOOLEN CARDERS.

Overseer of Carding. Position wanted by a man 42 years of age, American. Has worked on all kinds of wool, cotton and shoddy mix goods. Is familiar with Cleveland, Lombard and Davis & Furber carding machinery. Good references. 3653, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 30 years of age, American. Has worked on all kinds of wool, cotton and shoddy mixes, and is familiar with Davis & Furber, Lombard, Henderson, Platt and all kinds of condensers and feeds. Good references. 3658, Textile World Record, Boston, Mass.

Overseer of Carding.. Position wanted by a man 35 years of age, American. Has worked on all wool, cotton and shoddy mix goods, and is familiar with Lombard, Davis & Furber and Smith carding machinery. Good references. 3661, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 36 years of age, married, German. Has worked on all kinds of all wool, cotton and shoddy mix goods. Is familiar with Furbush, Smith and Bridesburgh carding machinery. Good references. 3606, Textile World Record, Boston, Mass.

Boss Carder or Superintendent of a shoddy mill. Familiar with all kinds of stock, from highest to the lowest grades. All makes of woolen carding machinery. 30 years of age; married; American. 3307, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill. Position wanted by a man who has had experience on all wool, cotton and shoddy mixed goods. Worked on Platt Bros., D. & F. and James Smith carding machinery. American. 3459, Textile World Record.

Overseer Woolen Carding. Position by a man 38 years of age; married. Worked on kerseys, meltons, cheviots, blankets, robes, underwear and hosiery, felts and sale yarns. Worked on D. & F., Lombard, Cleveland, Furbush, Platt Bros., Thornton Bros., John Haigh, Barker, D. & F. and English condensers. 3462, Textile World Record.

Overseer of Carding. Position wanted by a man, American, 26 years of age, not married. Has had plenty of experience and is familiar with Davis & Furber, Bridesburg, Cleveland, Smith and all kinds of feeders and condensers. 3493, Textile World Record, Boston.

Boss Carder in Woolen Mill, or would take a good second hand position. Worked on Davis & Furber and Lombard cards. First-class recommendations; 49 years of age; English. 3297, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 37 years of age, married and American. Has worked on cotton, all wool, wool and shoddy, cotton and shoddy mixes, dress goods, meltons, beavers, thibets, broadcloths, and kerseys. Is familiar with Davis & Furber, Smith, Furbush, Cleveland and Lombard spinning machinery. Good references. 3557, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill. Position wanted by a man 42 years of age, married, American. Worked on wool, cotton and shoddy mix goods. Worked on D. & F., Lombard, Cleveland cards. First-class references. 3566, Textile World Record, Boston, Mass.

Overseer of Woolen Carding, or second hand in large mill. Position wanted by a man 28 years of age, single, American. Worked on all kind of stock, both coarse and fine, from 1 to 7 run. Good references. Would prefer New England. 3552, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 57 years of age, married, American. Has worked on all kinds of woolen goods, and is familiar with all makes of American and English carding machinery. Has first-class recommendations. 3525, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill. Worked on all classes of woolen goods, all wool, all cotton, cotton, woolen and shoddy mixes. Familiar with Davis & Furber, Furbush, Goddard and all American makes of machinery. 44 years of age, married and American. 1953, Textile World Record.

Overseer of Carding. Position wanted by a man 39 years of age, married and American. Has worked on all wool stock, wool and cotton mixes, wool and shoddy, cotton and shoddy, and shoddy, and is familiar with all American made cards. First-class recommendations. 1827, Textile World Record, Boston, Mass.

WOOLEN SPINNERS.

Overseer of Spinning, Winding and Reeling in a carpet mill. Position wanted by a man 34 years of age, American. Has worked on all kinds of goods and stock, wool, cotton and shoddy and worsteds. Is familiar with Davis & Furber machinery. Good references. 3678, Textile World Record, Boston, Mass.

Overseer of Spinning, Twisting and Winding. Position wanted by a man 39 years of age, married, American. Has worked on yarns from 7/8 run to 10 run, wool, cotton and shoddy mixes. Is familiar with Davis & Furber and Johnson & Bassett spinning machinery. Good references. 3567, Textile World Record, Boston, Mass.

Woolen Boss Spinner, or would accept a good secondhand position. Familiar with all kinds of American spinning machinery; Davis & Furber, Johnson & Bassett, English mules, Curtis and Platt. First-class references; age 48; English. Could take a position at once. 589, Textile World Record.

Boss Spinner in a woolen mill. 32 years of age, American; familiar with Davis & Furber, Johnson & Bassett and English mules and twisters. First-class references. 3275, Textile World Record.

Boss Spinner or Twister in woolen mill. Familiar with all kinds of woolen, shoddy and mixed goods. Davis & Furber, Johnson & Bassett and English mules. First-class references; 32 years of age; American. 3281, Textile World Record.

Overseer of Spinning. American, with experience on nearly all classes of woolen and worsted goods, and on all machinery used in his work, wants position in the East. Best of references furnished. Wants first-class position. 3384, Textile World Record.

Overseer of Woolen Spinning, or would accept a good second hand position. American; 25 years of age; accustomed to wool and cotton mixes, wool and shoddy, wool pure cotton goods. Worked on the different kinds of machinery used in this work. 3410, Textile World Record.

Overseer of Woolen Spinning. 33 years of age; married, with 6 years' experience as overseer; worked on all kinds of yarns from 3/4 run to 10 run, and on nearly all the machinery used in spinning room. Prefers a position in New England. 3413, Textile World Record.

Overseer of Woolen Spinning. 30 years of age, with experience on all wool, all shoddy, wool and shoddy mixes, etc. Worked on D. & F., J. & B. mules and some other makes. Prefers the East. Would consider second hand position in a large mill. 3431, Textile World Record.

Overseer of Spinning. Position wanted by an American, 36 years of age and married. Worked on wool, cotton and shoddy mixes. Familiar with Davis & Furber mules. Good references. 3484, Textile World Record, Boston.

Overseer of Woolen Spinning. Position wanted by a man 48 years of age, married, English. Worked on all kind of yarns, wool, cotton and shoddy mix, on D. & F., J. & B., Platt, Curtis & Kent mules. Good references from first-class mills. Would prefer a position in middle west. 3499, Textile World Record, Boston, Mass.

Overseer Drawing, Spinning or Twisting. American, 35 years of age, with a number of years' experience, wants position. Worked on nearly all grades of yarns from fine to coarse, and on nearly all machinery used in this work. 3345, Textile World Record, Boston.

Overseer of Spinning. Position wanted by a man 26 years of age, American. Has worked on all classes of goods from 3/4 run mohair to 6 and 7 run, including cotton and wool mixes. Is familiar with Johnson & Bassett and Davis & Furber spinning machinery. Good references. 3563, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 30 years of age; English. Has worked all kinds of stock, cotton, wool and shoddy, from 5/8 run to 13 and is familiar with Davis & Furber mules and operators. Good references. 3595, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 37 years of age; married and American. Has worked on all kinds of wool, cotton and shoddy mixes. Is familiar with Davis & Furber and Johnson & Bassett spinning machinery and operators. Good references. 3603, Textile World Record, Boston, Mass.

FINISHERS.

Overseer of Finishing. Position wanted by a man 47 years of age, German. Has worked on cassimeres, kerseys, broadcloths, beavers, dress goods and cotton worsteds. Is familiar with all kinds of finishing machinery. Good references. 3680, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 41 years of age, married, American. Has worked on fancy cassimeres, unions, kerseys, cloakings, dress goods, friezes, cheviots, thibets, worsteds, etc. Is familiar with all kinds of finishing machinery. Good references. 2677, Textile World Record, Boston, Mass.

Second Hand in Finishing Room, Wet or Dry. Position wanted by a man 25 years of age, married, American. Has worked on all kinds of woolen and worsted goods, and is familiar with all kinds of finishing machinery. Good references. 3675, Textile World Record, Boston, Mass.

Overseer of Finishing.. Position wanted by a man 30 years of age, married, American. Has worked on worsted serge cassimeres, flannels, overcoatings, cloakings, dress goods, meltons, kerseys, union, etc. Is familiar with all kinds of finishing machinery. Good references. 3668, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 29 years of age, Scotch. Has worked on all kinds of woolens and worsteds, and is familiar with all kinds of finishing machinery. First-class references. 3652, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 28 years of age, married, American. Has worked on satinets and unions. Is familiar with all kinds of finishing machinery. Good references. 3659, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 46 years of age, married, American. Has worked on all kinds of woolens and worsteds, overcoatings, cloakings, dress goods, plushes, satinets and cotton warp fabrics. Is familiar with all kinds of finishing machinery. Good references. 3654, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man thoroughly familiar with all kinds of cotton goods and all kinds of machines in common use in a colored cotton mill. Has finished ginghams, flannels, blankets, fancy dress goods and endless variety of goods made in a fancy cotton goods mill. Strictly temperate and reliable. First-class recommendations. 1649, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 26 years of age. Married and American. Has worked on kerseys, broadcloths, thibets, meltons, fancy worsteds, piece dyes, cassimeres, flannels, and dress goods. Is familiar with all kinds of finishing machinery. Good references. 3576, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 34 years of age, married and American. Has worked on woolen and worsteds, beavers, kerseys, meltons, and dress goods. Is familiar with all makes of finishing machinery. Good references. 3573, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 47 years of age, married and American. Has had 21 years' experience on all kinds of woolen and worsted goods, cotton and shoddy mixes, union goods and low grade goods. Is familiar with all makes of finishing machinery. First-class recommendations. 3532, Textile World Record Boston, Mass.

Overseer of Finishing. Position wanted by a man 38 years of age, married and American. Has worked on fancy worsteds, cheviots, piece dyes, dress goods, mercerized worsteds, overcoatings, meltons and fancy woolens. Is familiar with all kinds of American and English finishing machinery. 3526, Textile World Record, Boston, Mass.

Overseer of Wet and Dry Finishing. Position wanted by a man 30 years of age. Thoroughly competent from loom to case on all kinds of woolen and worsted fabrics of all grades. Thoroughly understands carbonizing and neutralizing for both sweet and sour and steam finishing. Open for engagement on fair notice. Strictly temperate and a hustler. First-class references. 3508 Textile World Record, Boston, Mass.

KNITTERS.

Manager or Superintendent in underwear mill. Position wanted by a man 50 years of age, married and American. Has worked on fancy balbriggans and flat goods. Is familiar with Davis & Furber, and Campbell & Clute knitting machines. Was once in business for himself. Good references. 3519, Textile World Record, Boston, Mass.

Overseer of Knitting and finishing, or assistant superintendent. Position wanted by a man 40 years of age and married. Is experienced on all kinds of knit goods, more especially on ribbed underwear, silk hosiery, knit gloves and mittens. Is familiar with Nye & Tredick, McMichael & Wildman, Brinton, Scott & Williams knitting machines and all kinds of sewing machines, lace bar machines, and German Terrot loopers. First-class references. 3556, Textile World Record, Boston, Mass.

Superintendent or Overseer of Finishing. Position wanted by a man 36 years of age, married, Swede. Has worked on all kinds of underwear, ladies', gentlemen's and children's. Is familiar with all kinds of finishing machinery. Good references. 3674, Textile World Record, Boston, Mass.

Overseer of Pressing and Folding of Underwear. Position wanted by a man 45 years of age, married, American. Is experienced on all kinds of underwear, men's flat and ribbed goods and men's and ladies' hosiery. First-class references. 3676, Textile World Record, Boston, Mass.

Overseer of Seaming. Position wanted by a man 27 years of age, married. Has worked on ladies' cotton hose and all grades of cotton underwear. Is familiar with Willcox & Gibbs, Hepworth, Campbell & Clute stitching, welting, looping, etc., machines. Good references. 3683, Textile World Record, Boston, Mass.

Superintendent or Manager of a Hosiery Mill. Position wanted by a man 40 years of age, Scotch, has been employed for the past four years in a large mill in Canada in the manufacturing of cotton, wool and worsted hosiery. Understands the Scott & Williams' ribbers and automatic machines, also the Geo. D. Mayo automatic knitting machines and the Creelmen Bros'. worsted machine. Has had full charge of the mill, done the buying and looked after the office work. Could take a position at short notice. 3691, Textile World Record, Boston, Mass.

Overseer of Knitting. Position wanted by a man 25 years of age, American. Has worked on plush, both single and double flat goods, gauges from 12 to 30 balbriggan on gauges from 20 to 30. Is familiar with presses and block wheel work and Campbell & Clute, Tompkins Bros. and Crane knitting machines. Good references. 3685, Textile World Record, Boston, Mass.

Manager or Superintendent of Knitting Mill. Position wanted by a man 45 years of age, married. Has manufactured cardigan jackets, sweaters, leggings, gloves, hunting hoods, chest protectors, hose and half hose, etc. Is familiar with flat knitting machines and latch needle gauges from 5 to 16. Good references. 3667, Textile World Record, Boston, Mass.

Superintendent or Manager of Hosiery Mill. Position wanted by a man 37 years of age, married, American. Is experienced on woolen, worsted and cotton hosiery. Is familiar with all makes of knitting machinery, but prefers the Mayo, Acme or Standard. First-class references. 3650, Textile World Record, Boston, Mass.

Boss Knitter or assistant superintendent. Position wanted by a man 30 years of age, American. Worked on wool, shoddy, cotton, mercerized fleeces, single and double ribbed, and flat goods on Tompkins Bros., Campbell & Clute, Scott & Williams, McMichael & Wildman, Nye & Tredick, Stafford & Holt machinery. 3465, Textile World Record, Boston.

Boss Knitter. Worked on sweaters, toques, both woolen and worsted, cylinder and flat machines. Could take position in one week's notice. First-class recommendations; 33 years of age; married. 3278, Textile World Record, Boston, Mass.

Overseer of Knitting. Position wanted by a man 34 years of age, English. Has worked on sweaters, jerseys and union suits. Is familiar with Pepper, Nye & Tredick, and Stafford & Holt knitting machines. Good references. 3621, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Assistant Designer. Position wanted by a man 21 years of age, American. Is a graduate of the Lowell Textile School, and has worked on all kinds of cotton goods, woolen and worsted dress goods and men's wear. First-class references. 3649, Textile World Record, Boston, Mass.

Designer and Assistant Superintendent. Position wanted by a man 32 years of age, married, Scotch. Is experienced on all grades of woolens and worsteds, both men's and ladies' wear, cheviots, and homespuns a specialty. Is familiar with Crompton & Knowles looms. Good references. 3666, Textile World Record, Boston, Mass.

Designer and Assistant Superintendent. Position wanted by a man 43 years of age, married, English. Is experienced on all classes of goods from fine worsteds to the lowest woolens for men's wear. Fancy and plain cloakings and dress goods, linings, mercerized goods, unions. Is familiar with Crompton & Knowles looms and Johnson & Bassett and Davis & Furber mules. Good references. 3655, Textile World Record, Boston, Mass.

Overseer of Dyeing. Position wanted by a man 34 years of age, married, American. Has worked on raw stock, piece dyes, cotton warp, shoddy and silk noils, and all kinds of woolen goods. Is familiar with all kinds of dyeing machinery. Good references. 3672, Textile World Record, Boston, Mass.

Overseer of Dyeing, Bleaching, Mercerizing or Dyestuff Salesman. Position wanted by a man 45 years of age, married, English. Has worked on all kinds of woolen and cotton yarns and is familiar with all kinds of dyeing, bleaching and mercerizing machinery. First-class references. 3686, Textile World Record, Boston, Mass.

Overseer of Beaming, Spooling and Quilling. Position wanted by a man 40 years of age, married, an American. Worked on all kinds of cotton goods. Familiar with all kinds of machinery used in a beaming department. Good references. 3688, Textile World Record, Boston, Mass.

Overseer of Tenter Frames in Cotton Mill. Position wanted by a man 44 years of age, married, Scotch. Has worked on sateens, lawns, mull skirtings and shirtings. Is familiar with Butterworth, Stewart and Granger tentering frames. Good references. 3651, Textile World Record, Boston, Mass.

Roller Coverer, or Overseer of Roller Covering. Position wanted by a man 28 years of age, married. Has had a wide experience on all kinds of rollers used in woolen or worsted mills. Is familiar with the different methods of roller covering. Good references. 3662, Textile World Record, Boston, Mass.

Overseer of Dressing. Position wanted by a man 38 years of age, American. Has worked on all kinds of worsteds and woolens, dress goods, etc. Is familiar with Davis & Furber. Good references. 3663, Textile World Record, Boston, Mass.

Overseer Cloth Loom. Worked on lenos, lawns, sateens, twills and most all kinds of cotton goods; 36 years of age; married. Will go any place for a good position. English. 3451, Textile World Record.

Bookkeeper in woolen, worsted or yarn mill. Position wanted by an American, 33 years of age, married. Has the best of references. 3477, Textile World Record, Boston.

Wanted: Situation as office manager or bookkeeper by a capable man of long experience. Can take entire charge, or will accept any position paying a fair salary if in line of advancement. Good references. 3521, Textile World Record.

Overseer of Dressing. Position wanted by a man 26 years of age, married. Worked on fancy worsteds and woolens. Could take a position at short notice. Worked on D. & F. dressers and spoolers, Lowell Machine Co. slasher. First class reference. 3480, Textile World Record, Boston.

Overseer Milling, Mercerizing and Bleaching. 45 years of age, with large experience in England and Scotland on all classes of cotton goods and the machinery used in this work. 3414, Textile World Record.

Overseer of Winding, filling, warping or spooling. Has had considerable experience in keeping mill books. Would consider position taking charge of shipping. American; age 26; single; good references. 3242, Textile World Record.

ROPE DRIVES

THE possibilities of rope driving should be carefully considered by all large power users.

If you are about to build or remodel your factory you may be confronted with the problem of carrying your power to a distance or in a direction out of line with the driving shaft. In such cases the advantage of the rope drive will be manifest. Distance and direction make no difference to the efficiency of this system.

This, together with many other advantages, such as lack of electrical disturbances, safety, etc., is the reason the rope drive has become a recognized feature in the engineering field.

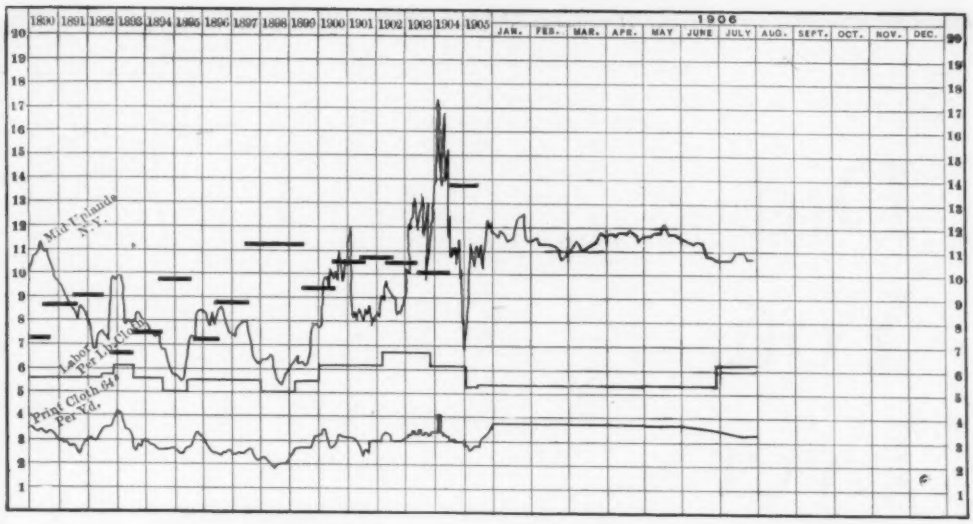
We have given the subject most careful study which will enable us to give expert advice on any questions of this kind that you may have.

Our booklet on "Rope Driving" sent upon request.

Plymouth Cordage Co.,

ESTABLISHED 1824.

North Plymouth, Mass.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905
1906
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid Uplands N.Y.
Labor Per Hundred
Print Cloth 64 Per Yd.

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

Cotton Market.

In the absence of definite news of anything affecting the cotton supply and demand, speculators have industriously searched for something on which to base theories that would suit their immediate requirements. Evidently lower prices were wanted by most of the traders, and consequently every rumor indicating an increase of the supply of cotton or a decrease in the demand for cotton goods has been used by the bear party. Spot cotton has yielded but slightly under these influences. The weather in the South has been very favorable for the growing crop and this has been the one important fact that has served as a guide to the cotton trade. The price of cotton for the next year is being regulated by the weather in the South, and there is no certain means of determining the condition of the new crop throughout the cotton belt. The consumption of cotton is going on at a record rate in all parts of the world. Lancashire is using more cotton than ever before. Old mills are being driven to their utmost capacity, and new ones rushed to completion and pressed into service. The demand for goods continues strong at satisfactory prices. This large consumption of cotton is working steadily for higher prices. The particular level of prices will depend on how far the supply now developing in the cotton belt will meet this demand. The world's supply of cotton of all kinds is 600,000 bales less than last year but 600,000 bales more than in 1903, when the scarcity sent prices to 17 cents a pound and forced short time both at home and abroad. The world's supply for July 27 is estimated by the Chronicle as follows:

	1906	1905	1904	1903
American bales	1,274,631	1,881,351	747,667	864,110
East India bales	1,106,000	1,110,000	847,000	864,009
	2,380,631	2,991,351	1,594,667	1,728,119

The movement of American cotton into sight from September 1 to July 27 is estimated by the same authority for a series of years as follows:

1905-06	10,737,366
1904-05	13,050,457
1903-04	10,015,464
1902-03	10,621,142
1901-02	10,248,525
1900-01	10,271,951

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.

Did You Ever

Did you ever try Wyandotte Textile Soda on Satinets, Unions, etc., in the fulling process where milling black was also used?

The results are decidedly pleasing in economy as well as in all other respects.

None Genuine except with a card bearing this Trade Mark

In Every Package.

Why not try it? It's your gain. Drop us a postal card for full directions and write your regular supply house to send you a supply of this soda.

The J. B. Ford Co.,

SOLE MANUFACTURERS,

Wyandotte, Mich.

THIS SODA WAS AWARDED THE HIGHEST PRIZE — GOLD MEDAL — AT BOTH THE ST. LOUIS AND PORTLAND EXPOSITIONS.

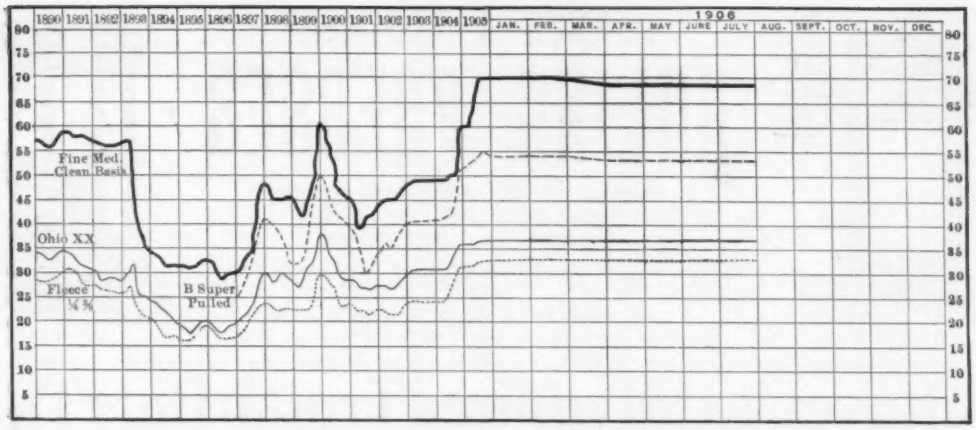

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905
1906
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Fine Med. Clean Basis
Ohio XX
Fleece ¼ ⅜
B Super Pulled

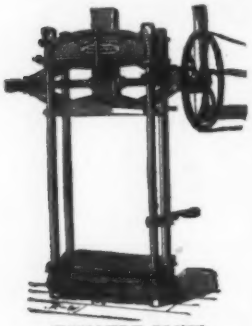
CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

Wool Market.

This market has been quiet since our last report, and there have been signs of a softening of prices. Western growers have parted with large lots at prices considerably below those asked at the opening of the season, and in some cases below those declined last December for the wool on the sheep's back. The growers have been trying hard to get an advance. In this they have been aided by Western bankers and by their own ability to carry their wool, but in opposition to these forces have been the law of supply and demand and what is known as "the gentlemen's agreement" among the leading buyers, who have evidently concluded there is a larger profit in standing together in opposition to the growers than in bidding against each other in a wild scramble to get the domestic clip. This combination is in evidence in other directions. It is in a great measure responsible for the lack of activity that once marked the American wool market. The trade has become narrowed down to a very few large operators. The small dealer is still in evidence, but in a steadily decreasing degree. This is in line with the trend in the manufacturing industry, and it is not surprising that a similar movement toward consolidation of forces should take place among the growers.

The foreign wool markets are slightly easier, but there is no expectation either at home or abroad that prices will materially decline. Prosperity is the rule. The demand for wool is large and prices

THE ONLY METHOD THAT WILL MAKE WOOL NONSHRINKABLE.
ABSOLUTELY NONSHRINKABLE
ABSOLUTELY NONSHRINKABLE
FORWOOL
Nonshrink
Registered.
FOR INFORMATION CHAS. H. HEYER, REAL ESTATE BLDG., PHILADELPHIA, PA.



KNUCKLE JOINT.

BOOMER & BOSCHERT

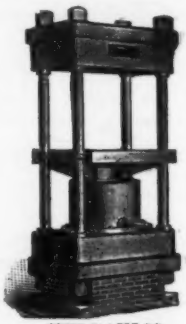
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

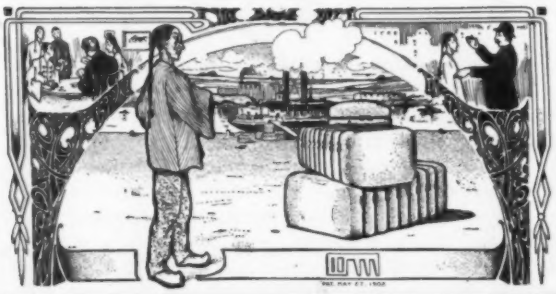
Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



HYDRAULIC.

DeHaven's Galvanized Trojan Bale Tie



The heathen Chinese is peculiar but he "buckles" on to a good thing. The U. S. Consular report under date of January 23, 1906, referring to the baling of cotton goods for export to China, states:—"There is a lightweight metal band used by some American mills which is better than any in use..... The metal does not rust by contact with water or dampness as do ordinary iron straps." This refers to our Galvanized Trojan Bale Tie with patent buckle. Send for samples and be convinced.

DeHaven Manufacturing Company,
50 Columbia Heights, Brooklyn, N. Y.

STERLING BLOWER & PIPE MF'G CO.

"STERLING" SYSTEMS

FOR MANY YEARS THE BEST

DUST COLLECTING, WOOL CONVEYING, ETC.

STERLING BLOWER & PIPE MFG. CO.

Write for "1906" Catalog.

HARTFORD, CONN., 1027 Huyshope Ave. New York Office, 136 Liberty St.

Your Safety Depends on the Efficiency and Strength of Your Valve.
BETTER BE SAFE THAN SORRY.

Water-Relief Valve.

BUY CROSBY STEAM APPLIANCES WHICH ARE RELIABLE

WRITE FOR CATALOGUE.
Steam Engine Indicators
Recording Gages
Blow Off Valves
Brandon Rubber Pump Valves
Single Bell Chime Whistles
Feed Water Regulators
Lubricators
Pressure and Vacuum Gages
Water Gages, Gage Glass, Etc.

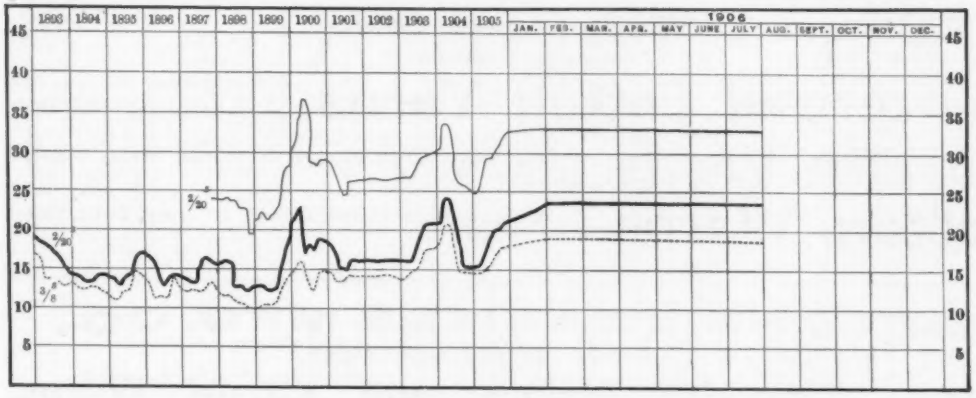
ENGINE—BOILER AND MILL SUPPLIES

Pop Safety Valve

CROSBY STEAM GAGE AND VALVE CO.

Stores, BOSTON, NEW YORK, CHICAGO, LONDON. Office and Works, BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

in the United States have reached a point where a marked decline abroad would be followed by an immediate and corresponding increase in purchases by this country.

An advance in wool prices is still more improbable. Cotton and shoddy, especially cotton, forbid it. Immense quantities of cotton yarn are going into men's wear fabrics. The use of cotton for this purpose is no new thing, but never before was so large a proportion of men's wear goods made of that material. These conditions lead to the belief in the trade that the price of wool will fluctuate within narrow limits around the present level.

Cotton Yarn Market.

Yarn is in good demand, especially for the knitting trade, which in the underwear branch is exceptionally prosperous. The men's wear mills are also taking cotton yarn in large quantities. Weavers have shown some disposition to hold off and await developments in the raw cotton market. The continued strength of raw cotton has affected the goods market, and led manufacturers to believe that the demand for cotton would prevent any break in the price of raw material. The present is a critical time in the cotton market.

Weather conditions in the near future may affect the size of the crop by millions of bales either way, and this introduces an element of uncertainty that makes it necessary for every spinner, weaver, knitter and dealer in cotton goods to become a speculator in cotton whether he will or not. He must either buy yarn or not buy it and by either course he takes chances on the rise or fall of raw cotton. The yarn trade is, however, pervaded by a spirit of optimism. Goods have sold, are selling and they believe will continue to sell freely if cotton should advance.

A large proportion of the spinning mills are sold ahead for several months, some of them well into 1907. The only factor affecting prices that is subject to doubt is the price of the raw material. We quote as follows:

Eastern Cops.

6s	18¼
8s	19¼
10s	19¾
14s	20¾
16s	21¼
18s	21¾
20s	22¼
22s	22¾
24s	23¼
26s	23¾
30s	24¾
34s	25½
36s	26½
40s	28

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	21½
14s	22
18s	23
20s	24
24s	25
26s	26
30s	29
36s	33
40s	38
45s	40
50s	45
55s	48
60s	52

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

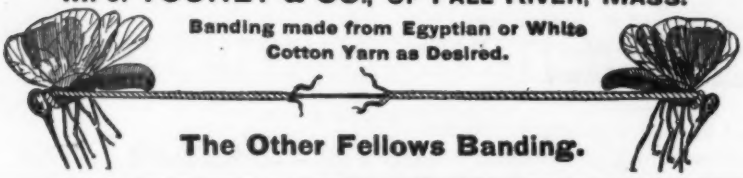
Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

THESE MULES CANNOT BREAK THE BANDING —MADE BY—

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS. 4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

Eastern Two-Ply Warps, Carded Peeler.

2/30s	29
2/36s	33
2/40s	38
2/45s	40
2/50s	45
2/60s	52

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	38
36s	40
40s	42
45s	45
50s	49
55s	52
60s	55
70s	60

Philadelphia Yarn Market.

Business has continued good on all lines of cotton yarn. The demand on two-ply yarns and on fine counts in single yarns has been especially good and prices have ruled steady throughout the month.

The outlook for fall business seems exceptionally good, both on knitted and woven products, and while there is a fair-sized cotton crop in prospect the price on cotton will undoubtedly be held firm at around its present basis, and with cotton steady in price, the chief influence in determining the price of yarn during the fall will be the demand.

A number of spinners are quoting November and December deliveries as the best they can consider. Prices today are as follows:

Southern frame spun cones:—

7s and coarser	18½
8s and 9s	18½
10s	19
12s	19½
14s	20
16s	21
18s	22
20s	22½
22s	23
24s	23½
26s	24½
30s	25
40s	33
50s	38

Southern high grade mule yarn:—
Cones.

10s	20½
12s	21
14s	21½
16s	22
18s	22½
20s and 22s	23-23½
24s	24

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

H. D. Salkeld & Bro.
COMMISSION MERCHANTS
With FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

LUDWIG LITTAUER,
Successor to MOELLER & LITTAUER.
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

Wiscasset Mills Co. | Patterson Manfg. Co.
Efrid Manfg. Co. | Tuscorora Cotton Mill.
HIGH GRADE HOSIERY YARN
White and Colors. All Numbers.
Sewing Twines on Cones and Tubes.
SPECIALTIES IN WEAVING YARN.
Black and white. Double and twist for woolen trade.
CANNON MILLS, 55 Leonard St New York.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.

Formerly E. JENCKES MFG. CO.

Carded and Combed Cotton Yarns for Weavers and Knitters
Double and Twist Yarns for Woolen Trade.

PAWTUCKET, R. I.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND
FITCHBURG, MASS. WARPS

CELEBRATED BRAND PYRAMID LACINGS

For Underwear, Overshirts and Sweaters,

JOHN CATHCART & CO.,
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Manufacturers of

TWINES, THREADS AND YARNS,

Jacquard Harness Twines of all kind on hand and made to order.

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The "Simplex" Tables

Comprising

Comparative Yarn Tables, showing the equivalent sizes of different systems of Numbering Yarn and Different Standards.

Reed Tables

Weight of Yarn per Yard of Cloth Tables.

Knitting Machine Gauges. Yarn Sizes for Knitting Machines. Sizes for Underwear and Hosiery.

Breaking Strength Table of American Cotton Warp Yarns.

Compiled by the

TEXTILE WORLD RECORD

Price 50 Cents

LORD & NAGLE CO., Publishers
299 Devonshire Street, Boston, Mass.

Indian Orchard Company
Cotton Warps and Yarns, In Gray and all Colors, Single or Two or more Ply, and Cable Cord.
Novelty Yarns, in Various Patterns, Colors and Twists.
Carded and Colored Cotton, For Mixing with wool, Machined or in Roving.
Indian Orchard Mass

Southern frame yarn, lower grades:—

6s and 8s	18½
10s	18¾

Eastern cones (high grade quality):—

10s	21
12s	21½
14s	22
16s	22¾
18s	23¼
20s and 22s	23¾-24¼

Skein yarn (mostly Southern):—

4s and 8s soft	18-18½
10s to 12s	19-19½
14s to 20s	20-21
22s	21½
14/2	20½
16/2	21
20/2	23
30/2	27½
40/2	35½
16/3 slack	21
12/3 slack	20
8/3 carpet	18½
8/3 slack	18½
9/4 slack	18½

Warps (Southern):—

10s to 12s	19-19½
14s	20
16s	20½
20s to 22s	21-22
26s	23
14/2	21
16/2	21½-22
20/2	23
24/2	24½
30/2	27½
40/2	36

Mixed colored yarns (mock twist, half colors):—

6s to 10s	19¼-19¾
12s to 14s	20½-21½
16s to 18s	22-23

Mock Egyptian, 2c. advance over white.
Egyptian, 7 to 8c. above best quality white.

Worsted Yarn.

Spinners are looking forward to the coming light weight business with both anxiety and hope. They are anxious because many of the spinners are getting out of orders and hopeful because the light weight season is opening well and weavers are getting much encouragement in the way of orders. We hear of one weaver on grey serge cloth who sold up within two days of placing his samples on the market. Then again we hear of another concern that within six days sold up one-third of its product on mercerized worsteds. At the present writing the weavers have just opened their goods and many do not know which of their lines are going to be sellers. Enough is known, however, to show that the bulk of the light weight business is going to be secure on serges, mercerized worsteds and cotton worsteds. The fancy worsted trade will be the small end of the business. The quality to be used in these fancy worsteds is 2/32s and 2/36s, about 3/8 Blood quality. The mercer-

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NASHUA JUNCTION, N. H.
Manufacturers of a superior grade of
CARDED COTTON
Gulf and Peruvian—in the white
To Meet the Most Exacting Needs of
WOOLEN MILLS

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps,
Cones, Cops,
Tubes
COTTON YARNS
426 and 428
Market St., Phila.
Theo. H. Strouse & Co.

Ballou Yarn Co.
PROVIDENCE, R. I.
Harness and Seine Twines and other Job
Gassing, Winding, etc. All Numbers.
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You Save Enough Insurance to Pay for the Equipment.
So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.
Pettes & Randall Co., 150 Nassau St., New York

Ramie Tops, Ramie Noils,
Silk Tops, Silk Noils,
Luzonne Silk,
Sliver, Rovings,
Yarns.

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TOPS, NOILS, ROVINGS, YARNS.
GARNETTED STOCKS.
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PREPARED TUSSAH SILK FOR WOOLEN MANUFACTURERS, READY FOR IMMEDIATE USE ON REGULAR WOOLEN MACHINERY.
SPECIAL TEXTILE FIBRES AND NOVELTIES.

Ramie Yarns,
Silk Yarns,
Silk Noil Yarns,

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

French System. **B. F. BOYER CO.,** Bradford System.

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

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Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

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SELLING AGENT FOR

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Highland Worsted Mills,
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Mills: Frankford, Pa.

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SUMMER STREET.
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TRADE MARK

Manufacturers of
Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA
Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

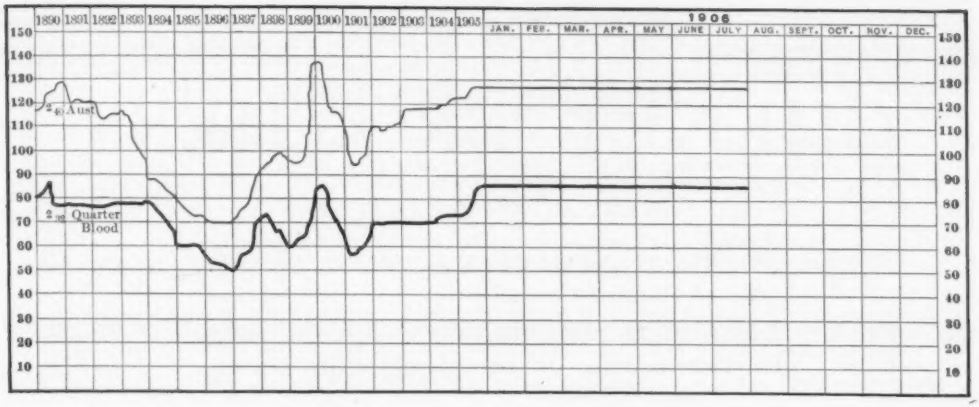

CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

ized worsteds are using 1/18s to 1/23s filling with twisted worsted and cotton warps. The tendency of the weavers of mercerized worsteds is to improve their qualities over last year, but the advance in the price of yarn will bring them back to last year's standards.

Spinners are holding firmly for prices and in some cases a slight advance must be expected. Wool dealers are holding fast for higher prices on wool out of which to make yarn. The spinners are about cleaned out of wool and if new orders are taken and dealers insist on higher prices, but one thing will happen, and that is that yarn prices will advance to meet the wool prices asked. It is a hard proposition that spinners are up against when quoting prices for yarn, and that is, What will the raw material cost to produce that yarn? and spinners are unwilling to run at a loss. Prices will not advance a great deal, but a small advance must be expected. To be sure, not so much worsted yarn will be used this year as in former years; cotton yarn is being substituted in every way possible and so much is this the fact that the cotton yarn spinners have more orders on their books from worsted weavers than they can handle. Said one weaver of ladies' dress goods, "If I could get the combed cotton yarn for the warps of my cloth I could take as many orders as I can get pounds of yarn to make them." In some instances where weavers formerly used worsted yarn, bales upon bales of Southern cotton yarn are being used.

Weavers of men's wear are changing their lines on account of the high prices of worsted and some who have never handled mercerized piece dyes have sent out samples and expect some good orders. Some orders have been placed for yarn, but buyers are holding off until it is known just what is wanted. Buyers feel that prices are not liable to go much higher and therefore a hand-to-mouth policy will result. Some weavers state that some spinners are more reasonable in price, but spinners are undoubtedly holding prices firmly and must continue to do so unless the wool market declines, which is very unlikely, at least for the next six months. The spinners that have had dress goods customers have been able to secure good business during the last six months, but the men's wear business has been disappointing. The trade have fought the 40 per cent. advance on cloth and the winter being an open one helped it along. Toward the end of the season more yarn was bought.

All the mills making cotton worsteds in heavy weight have had a good run and at this time the mills busiest are making heavy weight cotton worsteds. The knitters of jersey cloth for the rubber trade have had a poor business, because last winter there was but little snow and manufacturers of Arctic shoes requiring jersey cloth, being unable to sell the stocks already owned, are not manufacturing more, and in consequence spinners of yarns in French spun 1/45s and 1/30s, making specially for this trade, are getting but few orders, although prices are being firmly maintained.

All the hosiery knitters are busy and are running hard and using much French spun yarn. Weavers are using much French spun yarn for filling. It is a fact that underwear manufacturers, because of the high prices of worsted yarn, are using less yarn than has been the case for some time.

The top combers continue busy but are looking for orders. Much depends upon the coming light weight business and the present indications point to a busy time for all the mills. Prices are going to be maintained all along the line, but some day the substitution of cotton for wool will surely bring

CHENEY BROTHERS

Silk Manufacturers,

SOUTH MANCHESTER, CONNECTICUT.

Trams, Organzine and Spun Silks in the hank, or on spools and cones.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Pure Dye and Fast Colors Warranted

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.

Crochet Lace Edgings

Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps, Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias.

Write for Prices and Samples.

George W. Chapin, 229-231 Church St., Philadelphia.

TRADE MARK REGISTERED IN
NON-FLUID OILS
UNITED STATES PATENT OFFICE

What a lubricant *does*—not what it costs, is the only true and fair basis of its value. Non-Fluid Oils are the most economical lubricant you can buy almost without regard to price. They lubricate like fluid oils but go further *because none is wasted.* They last as long as greases but do not increase friction and coal consumption as greases do. One fair trial will prove what we say.

Samples and interesting booklet on lubrication free on request.

NEW YORK & NEW JERSEY LUBRICANT COMPANY,
Dep't H. 14-16 Church Street, New York City

about a reaction which will bring prices to a normal basis. We quote as follows:

2/40s Australian	1.28
2/40s Delaine	1.23
2/36s 1/4 to 3/8 Blood	1.00-1.02 1/2
2/32s 1/4 Blood	87 1/2
2/20s 1/4 Blood	82-87

Woolen Yarn.

Spinners are running fairly well, have been securing orders and have much business in prospect. Of course the change from heavy weights to light weights on the part of the weavers has been felt, but spinners will soon find other outlets for their production. Hosiery knitters are placing good orders. Those who bought early will be able to do the best as to price. The orders for hosiery are coming forward in a satisfactory manner and the demand is liable to be for large amounts on account of the high price of all worsted yarn. The users of yarns to make rubber boot lining are not placing orders on account of the lack of a demand for these linings from the rubber boot trade. The underwear manufacturers are having much yarn spun outside their own mills. This trade was never in so prosperous a condition as at the present time. We hear of one buyer who went the rounds trying to place orders for immediate delivery and was unable to do so, all the mills being sold up to next season.

Although busy the manufacturers have been buying but little yarn and little raw material. They ordered largely last year and have been running down the stocks so ordered until within the next sixty or ninety days some good orders must be placed. Many orders will be placed later by weavers who are using woolen yarn to replace worsted yarn in light weight men's wear.

A large quantity of Australian lamb's wool has been used, but some buyers are trying to get along until next season without buying, because it is felt that with the largest clip that Australia has ever known lamb's wool will sell for less than at

G. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.
THE S. BLAISDELL, JR., CO.,
COTTON, EGYPTIAN PERUVIAN
American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.
CHICOPEE, MASS.
Cotton Waste Purchased on Yearly Contract from Mills.

WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.
Boston Office, 200 Summer St.

JOSEPH M. ADAMS CO.
WOOLEN YARNS,
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving
YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

Official American Textile Directory.

The TEXTILE WORLD RECORD, which for years has compiled and published the ANNUAL OFFICIAL DIRECTORY OF THE TEXTILE INDUSTRIES, has bought the AMERICAN TEXTILE DIRECTORY, and merged the two Directories, retaining the special features of each, and with the combined subscription and sales list of both.

It is published in two editions, viz.: the Office Edition, price, $3.00, and the Travelers' Edition, smaller in size, with thin paper and flexible binding, price, $2.00. The combination price for the TEXTILE WORLD RECORD and DIRECTORY is $3.00 per year with the Travelers' Edition, and $4.00 per year with the Office Edition.

The 1906-7 Edition is ready for prompt delivery.

CONTENTS.

THE MAP FEATURE was originated by the Textile World in 1894, and is copyrighted. There are 19 of these textile maps, which show only the cities and towns where there are textile establishments.

A COMPLETE DIRECTORY OF MILLS including Cotton, Woolen, Knitting, Silk, Flax and Jute Mills of the United States, Canada and Mexico, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments.

Full information is given about each mill in almost every instance, viz.: the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct, and in many instances the name of the man is given who buys the raw material and supplies. In this section of the Directory, all the mills in one place are arranged under the head of that town, but so designated that the kind of a mill is determined at a glance by bold-face letters, so that a person looking, for instance, only for woolen mills, can pick them out at a glance. This system of arrangement is conceded to be the most convenient of any, as it groups all the mills in one town together and is self-indexing, while at the same time those interested in a particular class of mills, such as cotton, silk or knit, can find them as easily as if they were classified separately.

AN ALPHABETICAL INDEX to the textile establishments in the United States.

MILLS WITH WORSTED MACHINERY. A separate list is compiled of mills with worsted machinery for the convenience of those dealing exclusively with that branch. This is a feature unique in this Directory.

THE TEXTILE MILLS IN MEXICO. This feature of the American Textile Directory is continued and brought up to date by the latest information.

THE YARN TRADE INDEX. In this department are classified lists of manufacturers of different kinds of yarn who spin for the market. It gives the size of yarn spun and the form in which the yarn is put up, together with the selling agents of the mills, or, if sell direct.

COMMISSION AND ORDER SECTION. In this department are classified lists of establishments doing dyeing, bleaching, printing, finishing, and mercerizing on order, sub-divided according to the class of work done.

RAW MATERIAL SECTION. In this department are complete lists of dealers and brokers in wool, cotton, shoddy and extracts, and wholesale rag dealers.

SELLING AGENTS AND DRY GOODS COMMISSION HOUSES in the principal cities of the United States, giving the character of goods handled

MANUFACTURING CLOTHIERS in the principal cities, buying from first hands, giving the class of goods made and in most instances the name of the buyer.

SUIT AND CLOAK MANUFACTURERS in the principal cities, buying from first hands, giving the class of goods made and in most instances the name of the buyer.

MACHINERY AND SUPPLY SECTION. This contains a carefully classified index of over seven hundred builders of textile machinery and dealers in mill supplies.

LORD & NAGLE COMPANY,

PUBLICATION OFFICE, . . . 299 DEVONSHIRE STREET, BOSTON

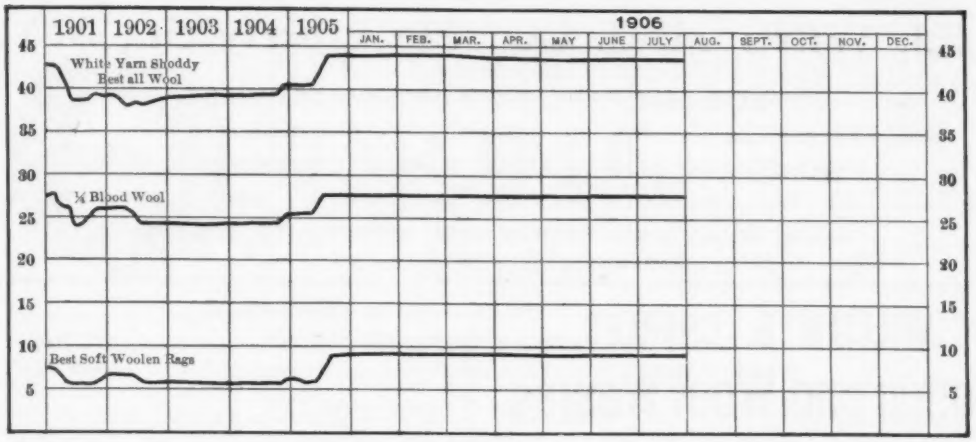

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

present. Although the prospective clip is large, there is but a small quantity of lamb's wool on today's market and the importers are holding these at high prices. Some are asking as high as 80 cents per pound, while 78 cents seems to be the going price. There is no buying of lamb's wool in the London market, as the market is cleaned up, and although it was off 10 per cent. with 20,000 bales withdrawn, yet it is impossible to secure any more lamb's wool at any price.

The domestic noils are aiding manufacturers to a great degree. Black scoured wool is selling for 82 cents per pound, with dealers complaining that they can make no money at that price. Much thread waste will be used the coming season, unless the price of domestic wool is much lowered.

The spinners of sale yarn are looking for a good business from French flannels and also from the knitters of 2 ply and 3 ply yarn. July is always a dull month, but the outlook for business is certainly good.

Rag and Shoddy Market.

The past month has been the dullest of an unusually dull season. Spinners are showing but little interest in extracts, as the demand for goods shows no indication of changing to the cheviot finish, for which short wool stock is adapted.

In spite of the absence of demand there is no accumulation of stocks, a fact that is evidence of the foresight of dealers in this trade. Woolen rags are distinguished from other textile raw materials by the ease with which the supply can be regulated to suit the demand. Now that the demand has fallen off collections shrink in like proportion.

Dealers are making no extra efforts to secure orders, as such tactics would result only in lowering prices without increasing the amount of business.

Woolen waste is scarce and desirable lots are quickly taken. Cotton waste on the other hand is in good supply and buyers are placing orders very sparingly. We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	44-47
White knit, all wool, best fine	35-40
White knit, No. 2	30-35
Light yarn, extra fine	30-35
New pure indigo blue	28-30

Merino.

Fine light, all wool	24-27
Medium light, all wool	15-17
Fine black, all wool	25-27
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 1	18-20
Medium dark, all wool, No. 2	15-16
Red knit stock, strictly all wool	20-22
Red flannel, all wool	20-22
Dark blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	15-18

WOOLEN RAGS.

Fine merchant tailors	10-11
Choice light colors	13-14
Browns	12-13
Blacks	9-10
Fine blues, plain	9-10
Fine dark	12-13
Medium dark	7-8

Worsteds.

Blue	15-17
Black	21-22

Serges.

New black	16-18
New blue	14-16

L. J. WING MFG. CO., 136 Liberty St., N. Y.,

Manufacturers of

WING'S DISC FANS, EXHAUSTERS, BLOWERS,

High Speed Steam Engines, Electric Motors, Acetylene Generators, Laundry Irons, etc. Also

WING'S FAN AND TURBINE ENGINE COMBINATION

For Forced Draft for Boilers, Humidifying, Removing of Steam, Vapors, etc. Something New and Valuable.

SAVES COAL, BURNS SMOKE, ADDS CAPACITY TO BOILERS.

WRITE FOR PARTICULARS.

WILLIAM B. CHARLES,

Cotton and Wool Wastes

Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

Boston Office: 200 Summer Street.

SHODDY

WM. H. H. SLACK & BRO.,
Springfield, Vt.

Carbonized Stock a Specialty.

FLOCKS

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN CO., MANUFACTURERS OF

.. Shoddies ..

of every description. Capacity 7,000,000 pounds per annum
Custom Carbonizing and Garnetting a Specialty.

New York Office:
140 DUANE STREET. RIVERDALE, NORTHBRIDGE, MASS.

HEGEMAN SEAMLESS BOBBIN COVER.

The best, cheapest and most satisfactory covering for winder bobbins. Will fit on any style or size.

FRANK E. KOLB,
MILL SUPPLIES
Amsterdam, N. Y.

SOLE AGENT FOR
Adams' Patented Latch Needles

Flannels.

New scarlet	19-20
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	9-9½
Old white flannels	23-24
White flannels, No. 2	11-12
Old red flannels	13½-14
Light blue flannels	7½-8¼
Old blue flannels	9½-10
Old plaids	7-8½
White stockings	24-25
White hood stock	24-25
Clear hoods	9-10
Blue stockings	8½-9
Fancy stockings, No. 1	9¼-11
Gray stockings	10½-11
Black stockings	11-12
Knit stock comforters	7-8
Red knit	13½-14
Light gray knit	10½-11
New light fancies	14-15
New fancies	11-12

Merinos.

Light, fine	16-17
Light, coarse	7¼-7½
Fine, dark	14½-15½
Coarse, dark	6½-6¾
Blue	11-12
Blue—seamed	
Black—seamed	15-16
New black	18-20
Small	4¼-4¾
Bunting	7-10

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	7-8
Fine black and blue, all wool	6-7
Fine dark, all wool	2½-4
Gig, fine, all wool	2-3
No. 1 black, all wool cut	6-10

COTTON WASTE.

No. 1 Spinners	10-10½
No. 1 Machine	4½-4¾
No. 2 Machine	4¼-4½
Machine Cop	8¼-8¾
No. 1 Cop	8½-9
No. 1 Card	8-8½
No. 2 Card	7½-8
No. 1 Oily Card	4½-5
No. 2 Oily Card	3½-4

FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1906	$21,239,052
LIABILITIES (including Capital)	12,518,551
NET SURPLUS OVER ALL LIABILITIES	8,720,501
Surplus as regards Policy-holders	11,720,501
Losses Paid Since Organization Over	99,000,000

HOME losses at San Francisco cannot exceed $2,000,000. Note amount of net surplus.

HOME Policy-holders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

ELBRIDGE G. SNOW, President.

EMANUEL H. A. CORREA, Vice-Pres. AREUNAH M. BURTIS, Secretary.
FREDERIC C. BUSWELL, Vice-Pres. CHARLES L. TYNER, Secretary.
CLARENCE A. LUDLUM, Ass't Sec'y. HENRY J. FERRIS, Ass't Secretary.

Peeler Combing	10-10¼
Egyptian Combing	10-10¼
No. 1 Linters	6-6½
No. 2 Linters	5¼-5¾
White Clips	4½-5
Colored Clips	1½-2¼

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.00-2.50
Citric, domestic	45-45½
Oxalic	6-6¼
Sulphuric, 60 deg., 100 lbs.	1.00-1.20
Muriatic, 18 deg.	1.15-1.75
Tartaric crystals	28-28¼

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.35-2.40
Alum, lump	1.75-1.80
ground	1.85-1.90
powdered	2.75-2.80
Aqua ammonia, 16 deg.	3¾-4
Ammoniac, sal., gray	5¾-6⅛
Borax, bbls.	7½-8½
Brimstone, crude, foreign ton	22.12½-22.62½
Copperas	52½-65
Cream tartar, crystals	22½-22¾
Fuller's earth, lump, 100 lbs.	
powdered	80-85
Glauber's salt	40-45
Potash, chlorate, crystals	8½-9¼
powdered	8¾-9½
carbonate	3½-4
Soda ash, carbonate, 48 per cent.	1.20-1.30
high test	1.00-1.25
Soda, bicarbonate, English	
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. English	85-90
Sal. American	70
Sulphate, alumina	1-1¾
Vitriol, blue	6-6½

Dyestuffs.

Acetate of soda	4½
Acid, picric, best crystals	22-27
tannic, commercial	32-35
Albumen, egg	50-75
blood	20-27
Alizarine, red	15½-16¼
Aniline, oil	9½-10¾
salt crystals	8½-10½
Antimony salt, 65 per cent.	24½
Bichloride of tin, 50 per cent.	11¼
45 per cent.	10
Bichromate of potash, American	8¼-8½
Bichromate of soda	6¼-6½
Bisulphate of soda	80-1¾
Cutch, mat	4-5
boxes	6-7
Dextrine, imported potato	6-7
corn	2.75-2.90
Divi-divi, ton	27.00-35.00

Flavine	23-40
Fustic, stick, ton	17.00-20.00
young root	45.00
Gambier	3.92-4.125
Hypo. of soda, Am. bbls. cwt.	1.40-1.50
Indigo, Bengal, low grade	52½-55
medium	60-65
high grade	75-85
Kurpah's	47½-60
Gautemala	35-70
Manila	43-45
Madras	42-45
J. (Synthetic)	18-20
Indigotine	95-1.80
Logwood, stick, ton	16.50-21.00
roots	15.50-16.50
Madder, Dutch	12-14
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1¼-1½
Nutgalls, blue Aleppo	23-25
Persian berries	7
Phosphate of soda	1.80-2
Prussiate of potash, yellow	15½-15¾
Quercitron, ton	20.00-22.00
Starch, corn, pearl, bbls.	2.35
corn, pearl, bags	2.20
potato	4-5½
rice	5½-6½
wheat	4¾-5¾
Stannate of soda	10-20
Sumac, Sicily, No. 1, ton	52.00-54.00
Sicily, No. 2, ton	50.00-52.00
Tapioca flour	2⅜-3½
Tin crystals	24½-28
Tumeric, Madras	5½-6
Zinc dust	5⅝-5¾

Loom Harness Association Meets.

The semi-annual meeting and dinner of the American Loom Harness Association was held at the Squantum Club in Narragansett Bay on Friday, August 2nd, and was one of its most enjoyable meetings. The day was fine, and the dinner one of the best that this famous club affords. Those present were G. B. Emmons, W. H. Jennings, J. E. Kendrick, W. H. Gibbs, H. P. Garland, I. Andrews, J. Barker, A. L. Jenkins.

Now Making Trucks.

Frank Bailey, Cedar Brook, N. J., who is widely known to the trade as a manufacturer of all sorts of dye sticks as well as yarn drying machinery, has lately added to his line the manufacture of mill trucks. This was a natural step to take because in using his dyeing machines the use of trucks is necessary to transfer the yarn to and from the machines.

Mr. Bailey is constantly among the mills and dyers, and knows their practical requirements to a nicety, and having adequate shop facilities, this truck business fits in to good advantage.

Mr. Bailey is a specialist in work connected with dyeing and drying, and is frequently consulted as an authority on machinery relating to that class of work. Starting in a very small way, he has built up a substantial business and now deals with over 700 different mills in various branches of his business. The cold air drying machine, which when first brought out was looked upon with great scepticism, has demonstrated its value for many requirements, and where the hot air system is desirable he supplies that type also.

The Textile World Record

Has the essential qualifications that get results for advertisers.

Circulation Character Contents Comprehensiveness

A large circulation of the highest quality.

Character and standing that carries weight with the trade (200 of its advertisers use no other textile paper.)

Contains practical information written and edited by practical men about new processes, new methods and machinery that is most valuable.

Reaches about 80 per cent. of the textile establishments in No. America including practically all of the large textile mills (users of 1,885,000 horse power) affording the best way of placing an advertisement at least expense before the men who buy for this vast industry.

Copy for next issue should reach us by the 25th of the month.

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Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas, Panamas, Poplins, Serges and Cheviots, Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eoliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

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DYERS AND BLEACHERS OF COTTON YARNS

Fast Colors for the Woolen Trade. Capacity 20,000 lbs. per day.

Office and Works, Pawtucket, R. I.

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Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

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FOR ALL TEXTILE PURPOSES

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Dyers of Peerless Black on Artificial Silk.

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We are Dyers of all kinds of YARNS AND Cotton Warps

We are sure we can give you better work and better service that you can get elsewhere. A trial will convince.

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Fast Colors for Wool and Cotton.
Full Line of Direct Cotton Colors.

THIOPHENOL BLACK T EXTRA and 2 B EXTRA.
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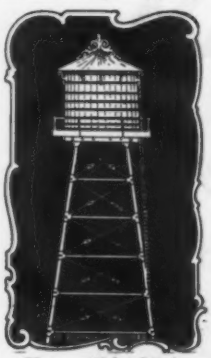
Purest and Best Made.
Safest to use with the Sulphur Colors.

"Absolutely Safe and Reliable. Ask Your Friends."
A Repeat Order
is evidence of the most convincing kind of satisfactory service.



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Where? How? Why? Who?

Where can we get such a machine?
How can we produce this effect?
Is the production of our mill too low?
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Why does this machine run badly, and what can I do to fix it?
How is this problem solved?
How is this fabric made?
Why is this fabric better than that?

Such questions and scores of similar ones are constantly arising, and the Questions and Answers Department undertakes to answer those relating to textile matters, free of charge to the best of its ability, and invites such correspondence from subscribers. Address the Boston office.

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of every shade and description, absolutely fast to sunlight, fulling, acids, etc.

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dyeing either after the one bath method absolutely fast, or on chrome bottom.

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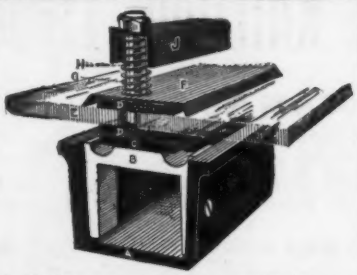

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C. Flat Iron
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G. Coil Galv. Brass Spring
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Mono-Hydrate Crystals, Snow Flake Crystals,

For Wool Soap and Scouring. For Mercerizing Cotton, Bleaching, Dyeing, etc. For Silk Makers, etc.

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Printing Rollers
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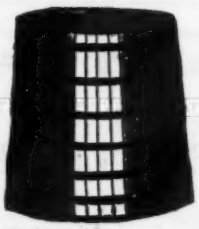

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American Directory of the Knitting Trade

OF THE

UNITED STATES and CANADA.

Compiled by TEXTILE WORLD RECORD.
(Twenty-fourth year of publication.)

This Directory contains a most complete report of the knitting mills, giving names of officers, class of goods made, number of knitting machines, number employed, how the goods are sold, names of buyers, kind of yarn bought, whether dye or finish.

A new feature this year is a series of Specially Engraved Maps showing the location of the Cities and Towns where there are Knitting Mills.

In dry goods section is a full list of manufacturers' selling agents and commission merchants handling knit goods, giving the names of the mills for which they sell and the man in charge of the knit goods department. There are also complete lists of jobbers, department stores and large retail establishments buying knit goods. The book is of convenient size for the pocket, well printed and handsomely bound.

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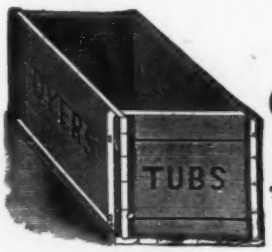

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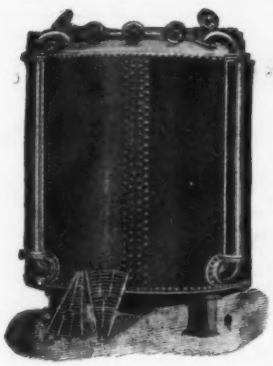

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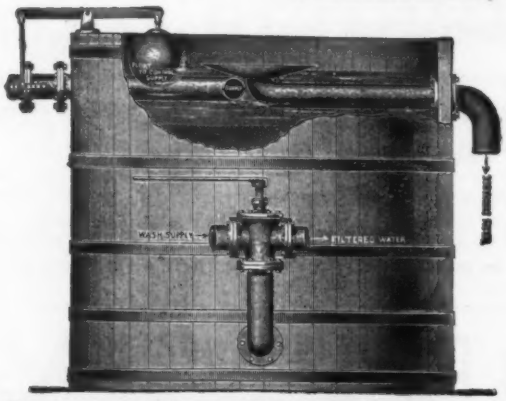

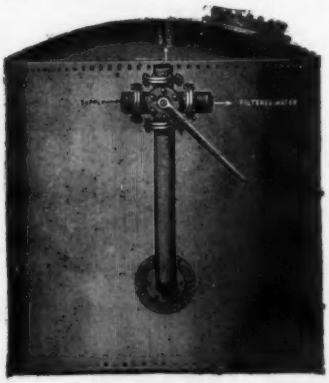

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Our filters are already in use in a number of the representative textile mills of the country, from whom we have received many expressions of satisfaction. Our representative will call and explain our system whenever desired.

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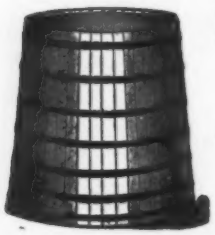

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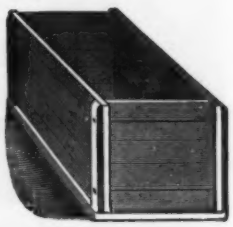
For Bleaching, Dyeing and Finishing.

Reservoir Tanks of any Capacity or Shape for Sprinkler Systems and all purposes.



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BUILDER OF

YARN DRYING MACHINERY

ON THE

COLD AIR SYSTEM. Simple, effective, inexpensive. Leaves yarn in beautiful condition. Also on the **HOT AIR SYSTEM** when great capacity is wanted.

Builder of Fans, Trucks for Yarn Dryers and Dye Houses.

DYE STICKS, Kettle Sticks and dry and sulphur house Poles, also Sticks to suit the Wolstenholm Machine from natural water grown cedar, and Sticks to suit the Klauder-Weldon, Lorimer and Hussong machines from finer grades of lumber. These Sticks have been thoroughly tested, and pronounced the best on the market. Guarantee satisfaction to buyers. Write for prices.

WORKS AT BRADDOCK, P. O. ADDRESS, CEDAR BROOK, CAMDEN COUNTY, N. J.

Beaumont's Patent Cop Dyeing BLEACHING and SIZING MACHINES

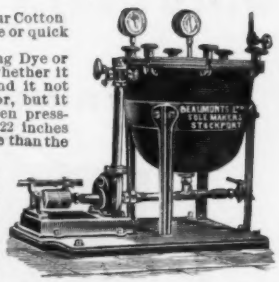
VACUUM MACHINE.

This machine will dye large, hard twisted, twine cops. It will dye or bleach any size of cotton cops. It will scour wool or worsted cops, cheeses and tops. It will scour or dye waste cops. This is a good machine to work in conjunction with the Vacuum and Pressure Machine for washing off, etc.

Vacuum Machines made of Copper and Brass	No. 1	No. 2	No. 3	No. 4
	£30	£45	£85	£130
Machines made of Iron	28	38	65	90

This machine will Dye, Bleach, Size and Scour Cotton Hemp, Woolen, etc., in the form of Cop, Cheese or quick traverse bobbins, any thickness or length.

This Machine will circulate absolutely boiling Dye or Size Liquor through every fibre of the yarn, whether it be cop or cheese which is under treatment, and it not only circulates this boiling Dye or Size Liquor, but it forces it into the fibre of the yarn under an even pressure of 10 lbs., and this is more than equal to 22 inches of vacuum; it is **three times** more effective than the ordinary Cop Dyeing Machinery.



This machine will dye evenly and thoroughly through every fibre of the Cops while the spare Cop plate is being refilled with Cops; **in fact it will do this in six minutes.**

Can be depended upon to dye a perfectly even shade all through the yarn, and will dye the most delicate colors. It will dye silk Cops or treat them with any necessary liquor. It will scour or dye wool tops. It will scour or dye large hemp cops and cheeses. It will scour and dye waste cops. We are the Patentees and Sole Makers.

Machines made of Copper and Brass	No. 1.	No. 2.	No. 3	No. 4.
	£40	£65	£115	£170
Machines made of Iron	35	50	75	110

We supply Two Sets of Skewers and Two Cop Plates with the Machine, whether it is for Weft Cops, Twist Cops or Cheeses.

BEAUMONT'S LIMITED, Brinksway, Stockport, England.

LOCATIONS FOR NEW INDUSTRIES

can be secured on the lines of the

Chicago, Milwaukee & St. Paul Railway

in the great middle west. It reaches the Copper Country and the pine and hardwood areas of Northern Michigan, the lead, zinc and iron regions of Wisconsin, the coal fields of Illinois, Iowa and Missouri.

Traverses the great agricultural and manufacturing states of Iowa, Minnesota, North and South Dakota. Operates 7,000 miles of thoroughly equipped railroad.

Correspondence is solicited with eastern manufacturers who desire to move their factories to, or establish branches in the West. Co-operation with Business Men's Associations on the lines of this railway in all matters affecting mutual interests is assured.

Inquiries should be as definite as possible.

Address

Industrial Department
Chicago, Milwaukee & St. Paul Railway
Room 1327, Railway Exchange
Chicago

THE COHNEN
CENTRIFUGAL
Dyeing Machine

U. S. Patent 776,295, Nov. 29, 1904.

Dyes Raw Stock
or
Yarn in Cops, Skeins or Bundles (Warps)

DYES SULPHUR COLORS
without bronzing or streaking and leaves the stock in perfect condition for carding or weaving.

ONLY ONE HANDLING
is required to dye, oxidize and hydro extract ready for the drying room.

The Machine may be seen in operation by applying to the American Agents.

A. KLIPSTEIN & CO., 122 Pearl St., NEW YORK.

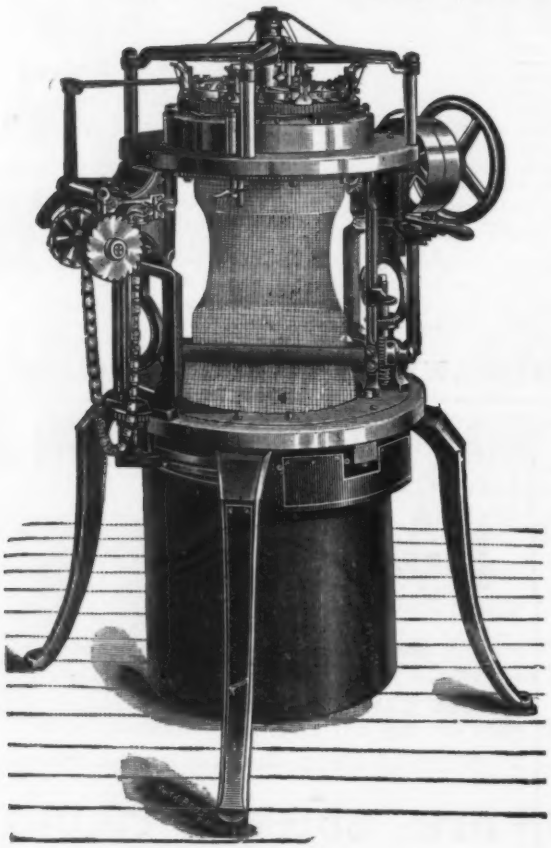
WILDMAN MANUFACTURING COMPANY

(Formerly McMichael & Wildman Mfg. Co.)

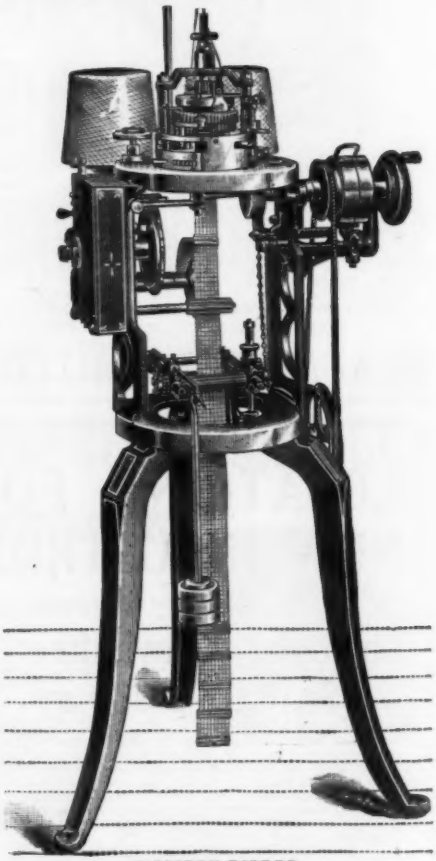
CIRCULAR RIB KNITTING MACHINERY

AUTOMATIC AND PLAIN

For all classes of Ribbed Hosiery and Underwear, Combination Suits, Sweaters, etc.



AUTOMATIC BODY MACHINE.



HOSIERY RIBBER.

ESTABLISHED REPUTATION FOR LARGEST PRODUCTION, BEST QUALITY FABRIC, DURABILITY, ECONOMY OF OPERATION

Full Particulars, Description and Samples Furnished upon Application to the

WILDMAN MFG. CO.

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The most advanced types of straight bar

KNITTING MACHINES

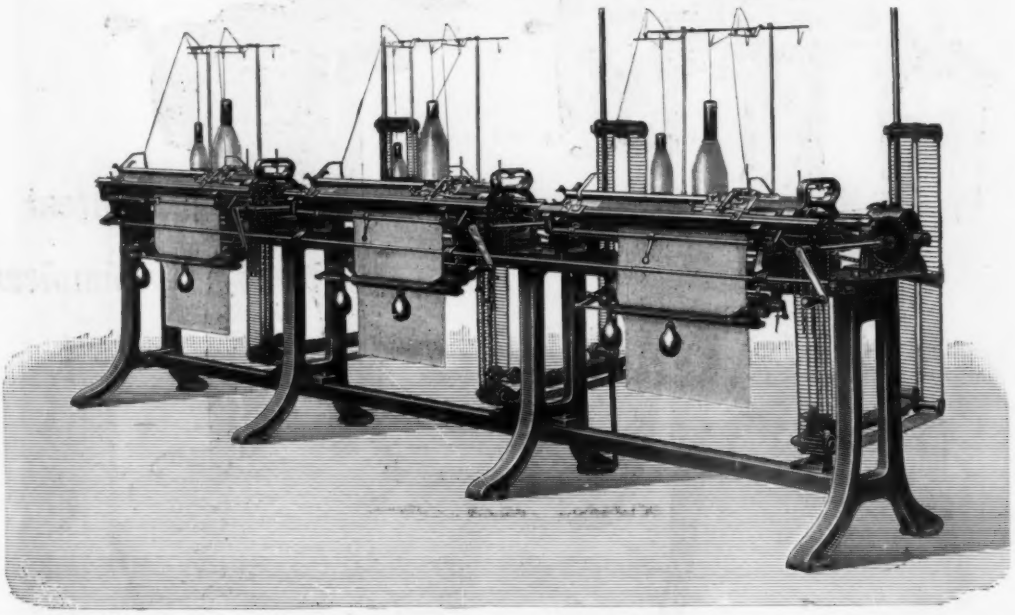
for the manufacture of full-fashioned hosiery (cotton, lisle or silk), in all gauges from 14 to 32 needles (spring beard) to the inch, from 12 to 24 sections; for the manufacture of full-fashioned shirts and drawers from 6 to 10 sections with automatic narrowing and widening, built by

SCHUBERT & SALZER

in Cotton-system, of superior quality and construction, with split, striping, single and double lace attachments.

Also machines with latch needles, hand or power motion, for the manufacture of Sweaters, Cardigan Jackets, Ladies' Blouses, Vests, Gloves, Mittens, etc.. built by

SEYFERT & DONNER



This picture represents one of Seyfert & Donner's full automatic power knitting machines, with chain drive. Each head on stand works independently and can have needle beds of different gauge and width. The machine is fitted with three automatic thread-carriers, two for striping and one for the dividing thread, self-acting lock for welt and royal rib, racking arrangement for whole or half revolution, take-up rollers for endless goods, automatic and electric stop motion.

OTTO WALTHER,

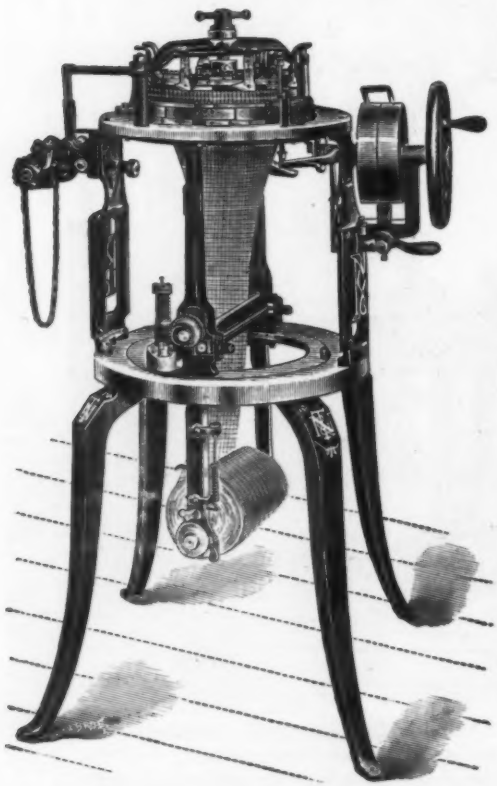
507 Bourse Bldg., = = Philadelphia

NYE & TREDICK CO.

Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.



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Largest Production For Least Money

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Geo. D. Mayo Machine Co.,
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Latest
Simplest
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MAYO'S

New Full Automatic Knitter.

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Braids and Laces

The recognized

Standard Finish

For Trimming Ladies'

Ribbed Underwear

JAMES TAYLOR,

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OF ALL KINDS. NEW AND SECOND HAND.

A RARE OPPORTUNITY TO BUY.

The entire plant of the late American Knit Goods Manufacturing Co. of Brooklyn, New York, consisting of machinery for manufacture of Ladies' and Men's Ribbed Underwear, Sweaters, Blouses, Athletic Goods, Bathing Suits and Full Fashioned Fancy Knit Goods, etc., the builders of said machinery are Leighton, Stafford and Holt, Crane, Nye and Tredick, Scott and Williams, Wildman, Davis and Furber, McCreery, Seyfert and Donner, Union-Special, Willcox and Gibbs, Wheeler and Wilson, Arnold, Industrial and other well known makers,—The above machinery is now on sale in lots to suit purchasers on the premises, at Wythe Avenue and Penn Street, Brooklyn, New York.—All correspondence should be addressed to James Taylor, No. 835 Arch Street, Philadelphia, Pa. of whom catalogues may be had on application.

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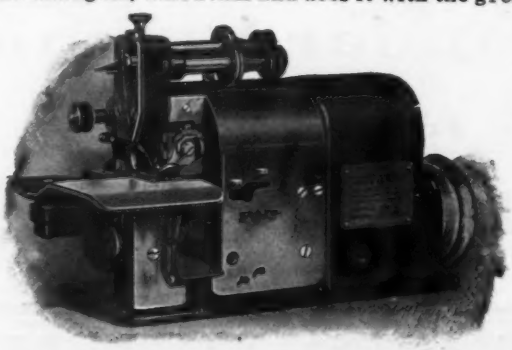
High Speed Overseaming, Overedging and Scallop Stitch Machines

are LIGHT RUNNING, FAST and DURABLE.

OUR NEW STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

STYLE 35 B SHELL MACHINE

For Necks and Fronts of Rib Goods, produces the most showy, substantial finish.



USE STYLE 17 or 22 for Bed Blankets and STYLE 18 for Horse Blankets.

Send for Catalogue and Samples.

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FOR ANY ARTICLE THAT IS KNIT

GROSSER FLAT KNITTING MACHINES, Fully Automatic for Motor Power. Built for anything that can be knit on flat latch needle machines.

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for hand and power driving, of best quality and perfect construction.

Specialty: Jacquard Machines

for hand and power driving for manufacturing of sweaters and every possible fancy article of that nature.

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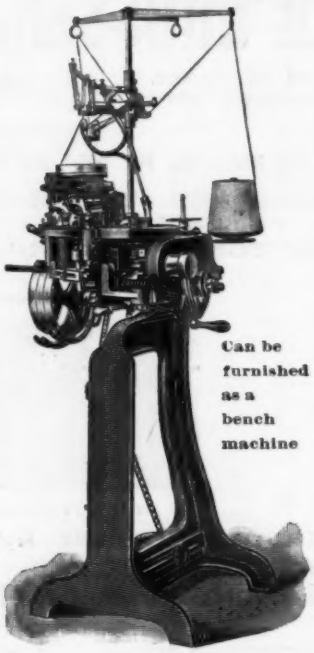
The Invincible

Full Automatic.

"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.
SIMPLE, POSITIVE AND EASY TO OPERATE.



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Southern Representative.

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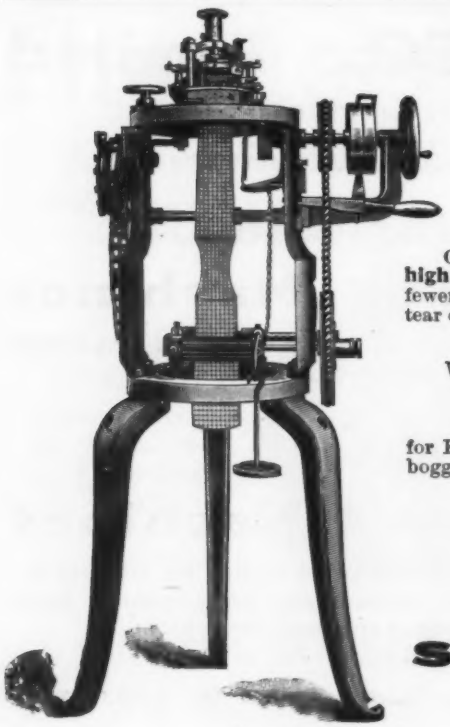

High Speed Rib Knitting Machinery.

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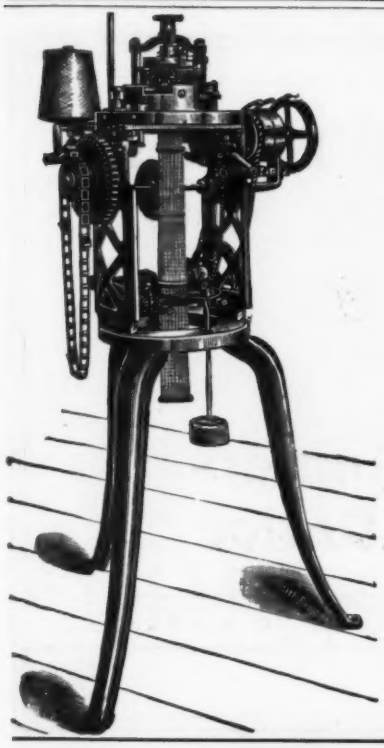

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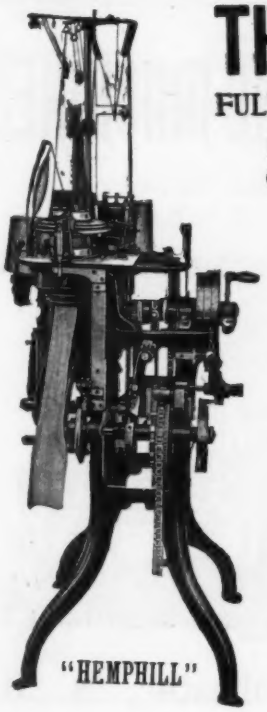
For HOSIERY and UNDERWEAR.

Complete Estimates Furnished. ***Send for Particulars.***

The cut shows our **Improved Automatic Ribber with** Welt and Slack Course for Half Hose, Tops and Ribbed Legs.



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One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

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Both contain all the well-known essentials demanded of first-class knitting machines.

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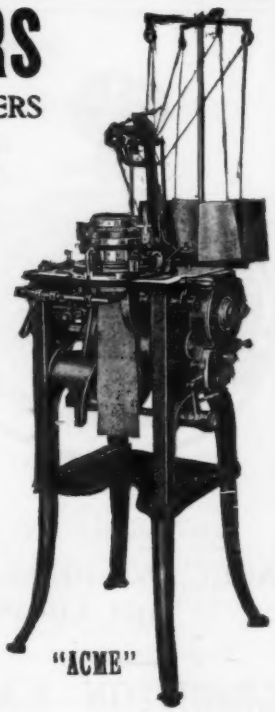

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Full Automatic Knitters

With or without **Transferring Device**

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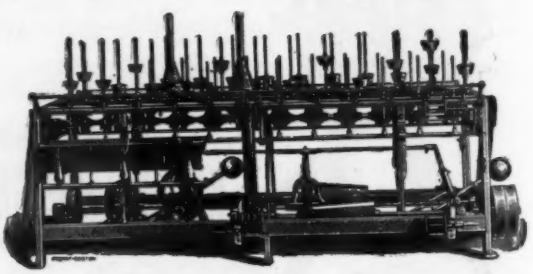

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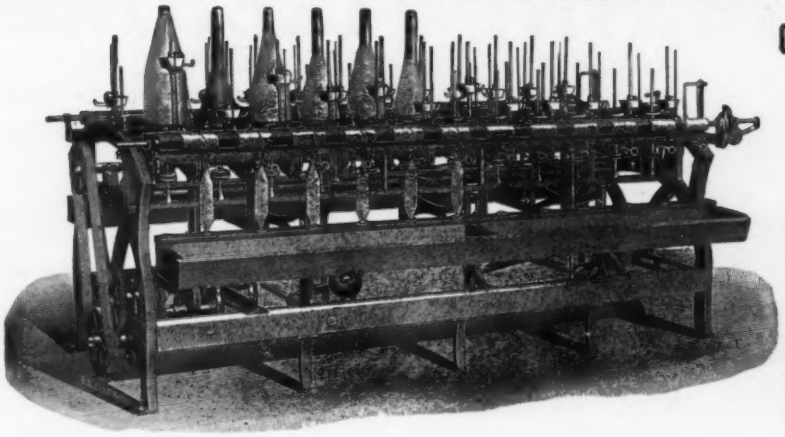
For Hosiery Mfrs., Wind for Cop, Skein or Bobbin.



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To Spool from Cop, Skein or Bobbin.

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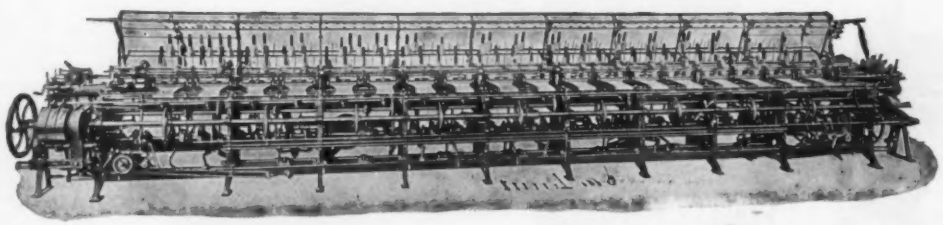

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COTTON SYSTEM, wedge heel; this machine manufactures entire full-fashioned ladies hose or half hose and dispenses with the foot machine.
COTTON SYSTEM, newest construction. The new machine knits the entire hose or half hose complete down to the toe, it makes French heels and French feet.
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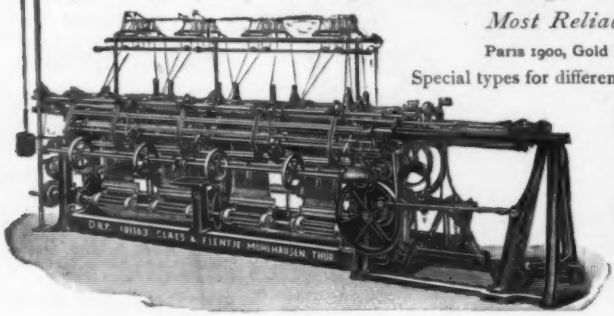

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Paris 1900, Gold Medal! Paris 1900, Gold Medal!

Special types for different articles. Number of heads to order.

Automatic Sweater Machine

With Independent Heads, Latest Improvements. Recognized as "The Best."

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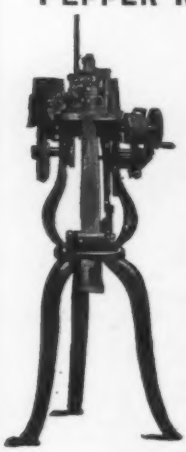

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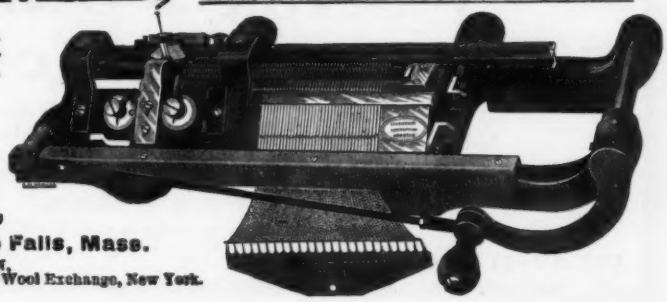

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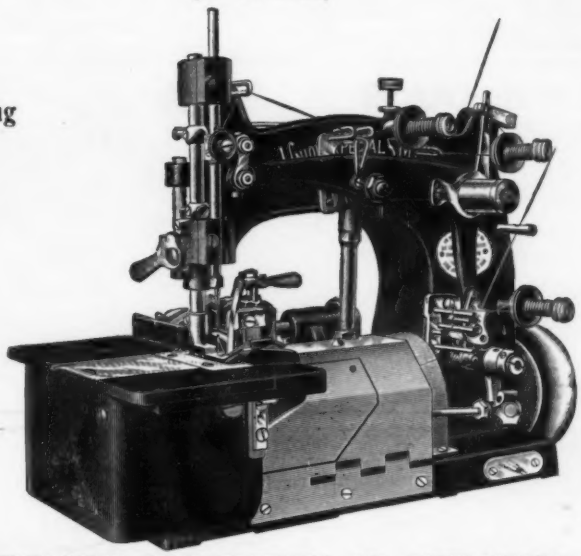

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Fabrics of Every Kind.

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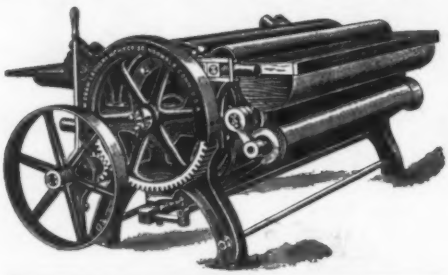

This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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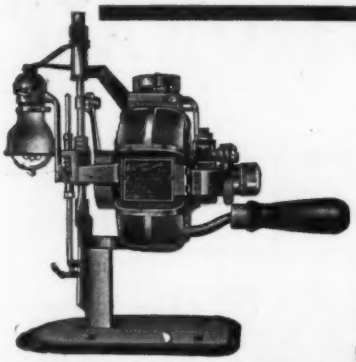

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for cutting these goods into narrow strips and rewinding same into rolls.

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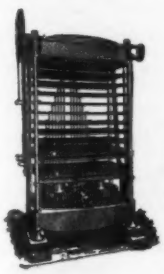

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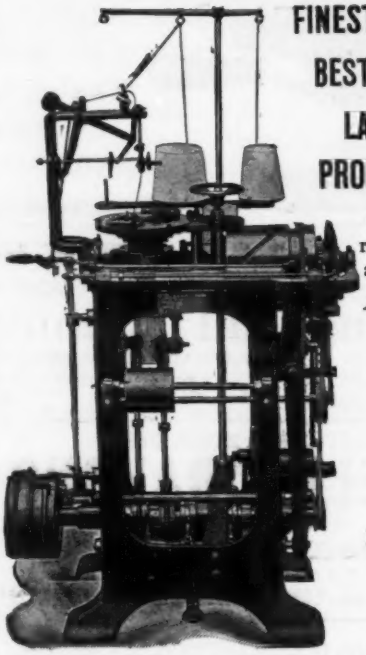

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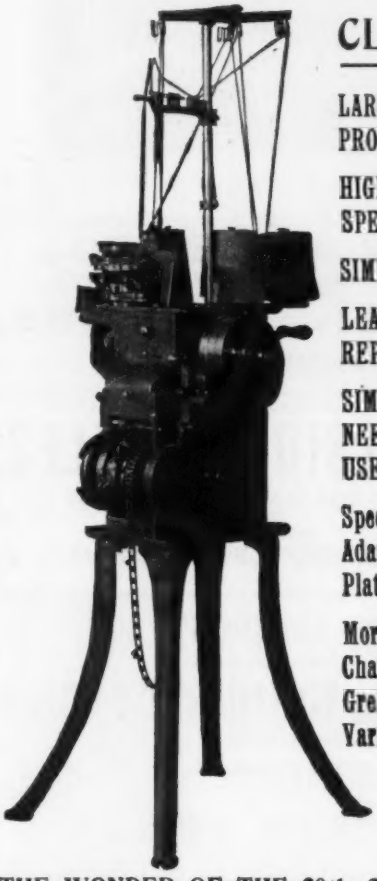

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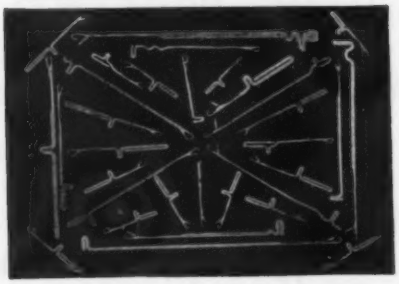

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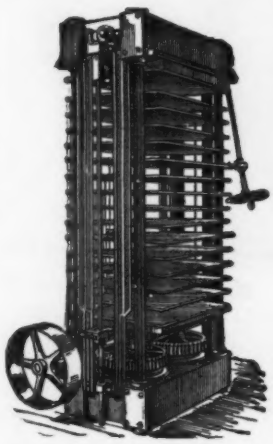

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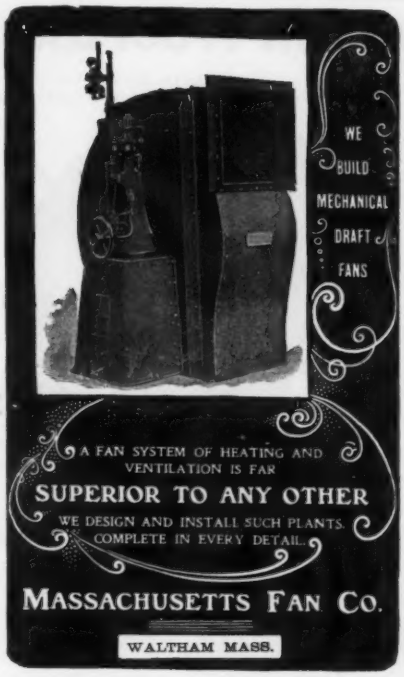
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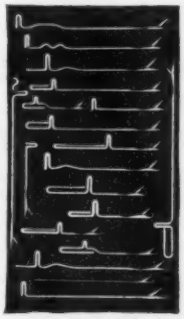

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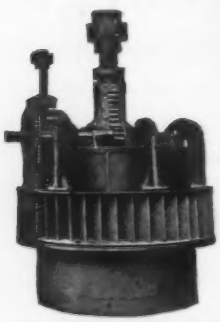

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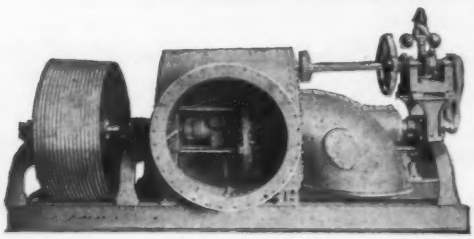

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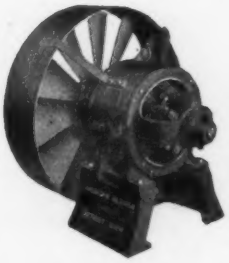

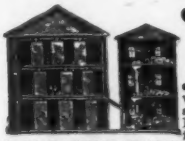

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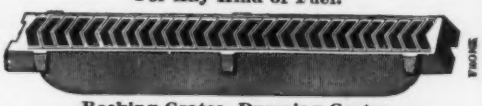

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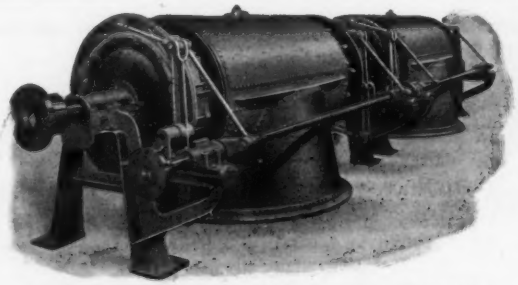

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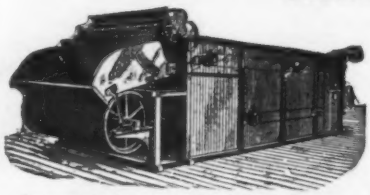

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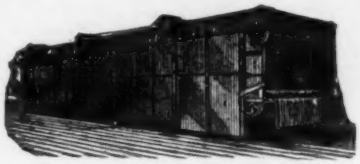

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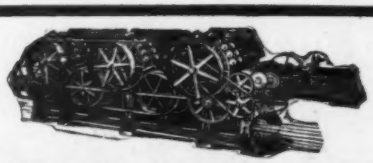

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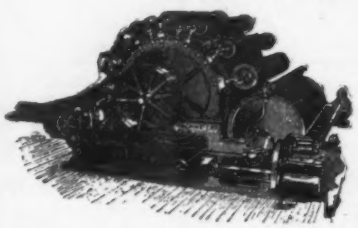

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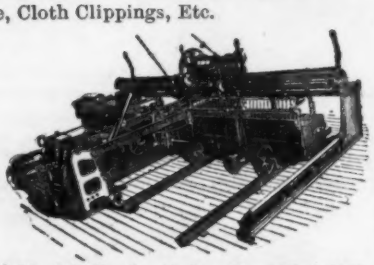

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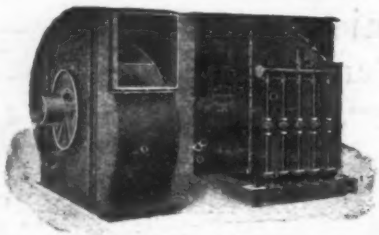

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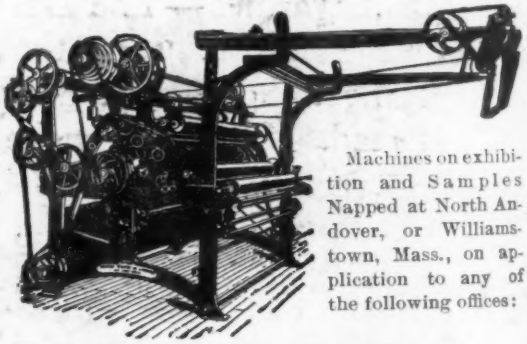

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